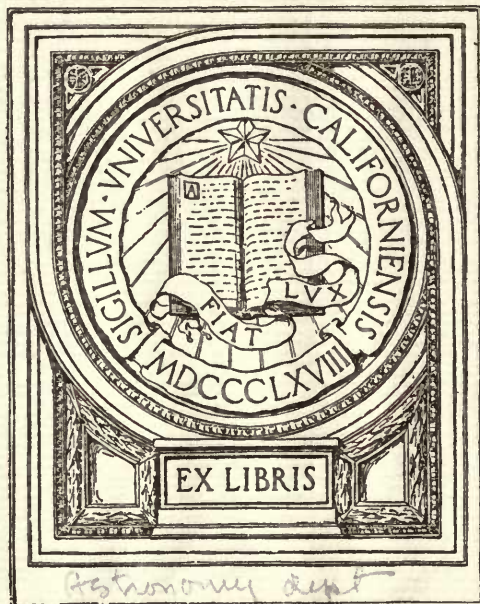


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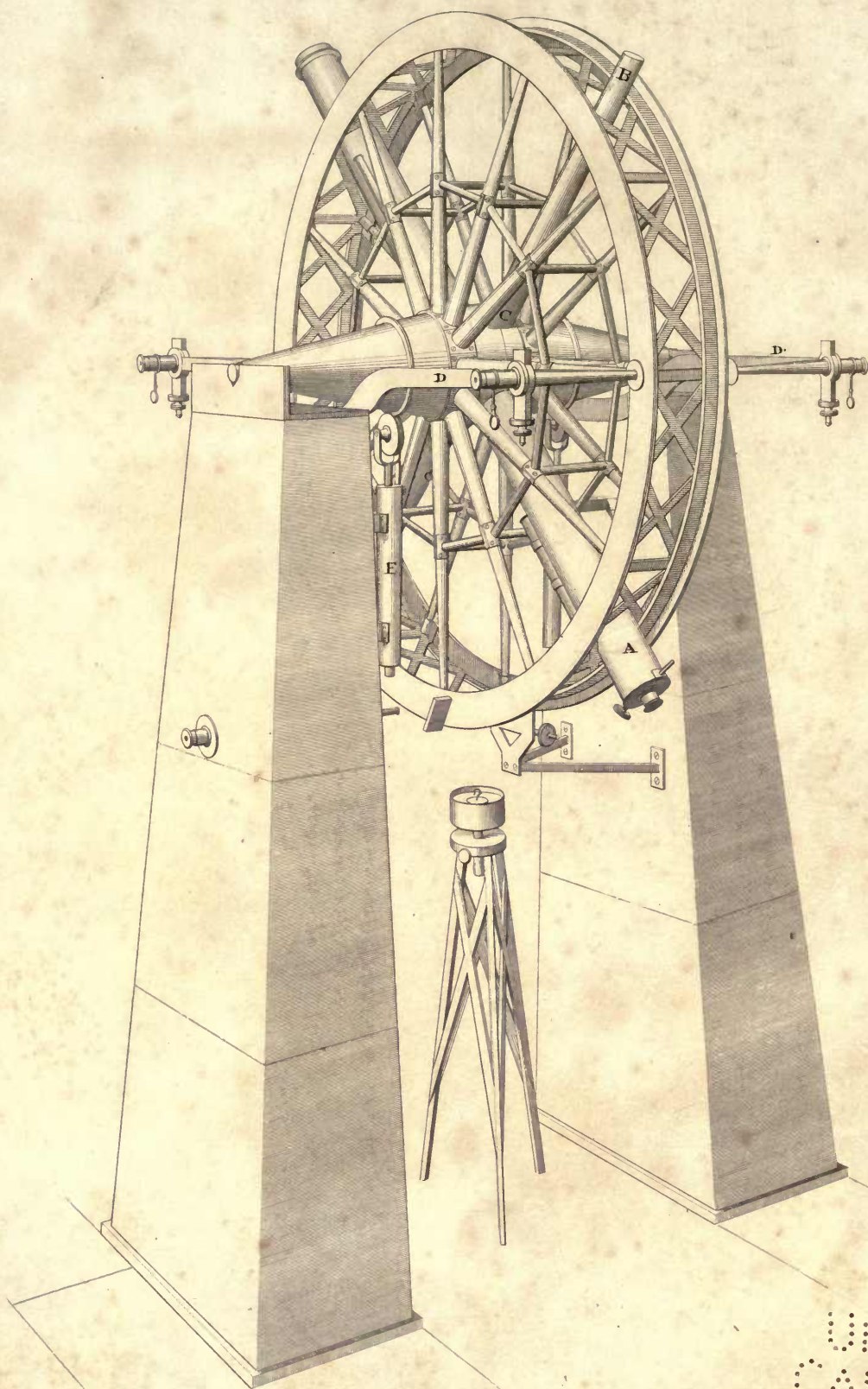
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Mr. Groombridge's Transit Circle.

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*Presented by the Lords Commissioners of the Admiralty
A
To The Rev. &c. W. R. D.*

CATALOGUE

OF

CIRCUMPOLAR STARS,

DEDUCED FROM THE OBSERVATIONS OF

STEPHEN GROOMBRIDGE, Esq. F.R.S. S.R.A. NAP.

FELLOW OF THE ROYAL ASTRONOMICAL SOCIETY OF LONDON, &c.

REDUCED TO JANUARY 1, 1810.

EDITED BY

GEORGE BIDDELL AIRY, Esq. A.M.

ASTRONOMER ROYAL.

PRINTED, AT THE PUBLIC EXPENSE, BY ORDER OF THE
LORDS COMMISSIONERS OF THE ADMIRALTY.

LONDON:

JOHN MURRAY, ALBEMARLE STREET.

M.DCCC.XXXVIII.

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CATALOGUE

CIRCUMSTANCES

Gift of Astr. Soc. of the Pacific

ASTRONOMY DEPT.

UNIV. OF CALIFORNIA

LONDON:

PRINTED BY JAMES MOYES, CASTLE STREET,
LEICESTER SQUARE.

LONDON:

BY HURRY, ALBEMARLE STREET.

A. D. 1847

PREFACE.

IN laying before the Public Mr. Groombridge's Catalogue of Circumpolar Stars, I think it necessary to state the most important points of its history, so far as I have the means of giving them correctly; and, in particular, to mention the circumstances which have caused me to appear as Editor of the work.

Mr. Groombridge's observations, as recorded in his Transit and Circle Books, commenced in the month of June in the year 1806. The observations for some time appear to have been directed, in a great measure, to the formation of his Table of Refractions, published in the Philosophical Transactions for 1810 and 1814. After 1806, however, he applied himself to the observations necessary for the formation of a Catalogue of Circumpolar Stars, with an assiduity and regularity which would be most honourable to any established observatory. The number of observations made between 1806 and 1817 is (on a rough computation from the observing books) not fewer than 24,000 transits, and 26,000 observations of zenith distance. The reductions depending on clock error, index error, and instrumental error of all kinds, appear to have been made entirely by Mr. Groombridge himself; and about one-half of the reductions to mean places appear to have been made by him. When it is considered that the prime of his life had been actively employed in commercial industry, that these observations and computations were the laborious amusement of advanced age,* it will, I think, be allowed, that the work is one of the greatest which the long-deferred leisure of a private individual has ever produced.

Mr. Groombridge, as I have heard from his friends, was extremely anxious for the speedy reduction and publication of his Catalogue. It was, probably, from this motive that he applied to the Board of Longitude for assistance in completing the computations.† The assistance applied for (I know not whether the hire of two computers, or the general care of the work) was granted; but how far the persons employed were under the direction of Dr. Young, secretary to the Board of Longitude, or how far they were under the active superintendence of Mr. Groombridge,

* Mr. Groombridge was in his fifty-second year at the commencement of these observations.

† The minutes of the Board of Longitude, subsequent to the year 1821, are lost. The application alluded to was not made before 1822; but I cannot state the time more precisely.

I cannot with certainty state. It appears that Mr. Henry Jenkins, then principal computer of the Nautical Almanac, and Mr. Thomas Glanville Taylor, late assistant at the Royal Observatory, Greenwich, and now director of the East India Company's Observatory at Madras, had a part of these computations. I am, however, unable to say whether any other persons were employed, or to what time those whom I have mentioned continued to labour on the reductions.

After the death of Dr. Young (in the spring of 1829), and the subsequent departure of Mr. T. G. Taylor for India, it became necessary to appoint a new superintendant of the computations; and Mr. Pond, apparently in his official character as Astronomer Royal, nominated Mr. Henry Taylor, brother of Mr. T. G. Taylor above mentioned. The calculations, it appears, were first put in his hands about June, 1830. Computers were employed by Mr. H. Taylor; the reductions were completed; the Catalogue in every respect prepared for press; and, after the necessary sanction from the Board of Admiralty, the Catalogue and Introduction were completely printed at the expense of the Government. Before publication, copies, in the hands of the scientific officers of the Admiralty, were exhibited to some gentlemen, whose opinion of the work it was thought desirable to learn.

It was thought by these persons that some alterations might, with advantage, be made in the Introduction. To give any opinion on the Catalogue itself, without a laborious comparison with the original books, was of course impossible; all that could be said was, that its form was unobjectionable. An offer was made by the Rev. Richard Sheepshanks to assist in remodelling the Introduction; and, the observing books being placed in his hands, it was accordingly re-arranged and re-written, in conformity with his proposition. It appears, however, that some alteration was made in the Introduction by Mr. H. Taylor, after it had left Mr. Sheepshanks' hands. This Introduction was set up in type. These transactions occurred in the autumn of 1832.

Mr. Groombridge's death took place on March 30, 1832. In the Annual Report of the Council of the Royal Astronomical Society (read Feb. 8, 1833), an obituary (as usual) was drawn up, in which allusion was made to the labours of Mr. Groombridge, and a general statement was made as to the degree to which Mr. Groombridge himself had carried the reductions. Mr. H. Taylor considered himself aggrieved by this statement, and addressed a letter to that effect (dated April 11, 1833) to the President and Council of the Society. Mr. Sheepshanks, who was the author of the obituary alluded to, and who had acquired considerable familiarity with the system of books, proceeded with the examination necessary for vindicating, to the President and Council of the Society, the correctness of his account. In the course of this examination he was led by degrees to the conclusion, that the Catalogue, as printed, was not fit for publication; and this opinion was expressed to

the Hydrographer, Capt. Beaufort. After some correspondence, the question as to suppressing the printed Catalogue entirely was referred by the Lords Commissioners of the Admiralty to Mr. Francis Baily and myself, and notice to this effect was transmitted to Mr. Sheepshanks and to Mr. H. Taylor. The books were placed in our hands, and explanations of the general arrangement, and statements of particular points, were furnished by Mr. Sheepshanks : Mr. Taylor declined to attend. After an investigation, attended with considerable labour, it was decided by Mr. Baily and myself, not only that the Catalogue was erroneous, but also that the errors were of such a nature that no system of cancelling or errata could remove them ; and that the work ought to be suppressed. In conformity with this decision, no further step was taken by the Board of Admiralty for the publication. This report was made about the termination of January, 1834.

In this state of affairs, the Board of Admiralty desired my opinion, as to the steps which it might be advisable to take for completing the publication, the probable expense, and the selection of a superintendant. In reply, I expressed my belief that the great mass of work was well done, and that the expense of examining and arranging in a proper form would not be very great ; but I stated that I could not, at the moment, fix upon any competent person who was at leisure to undertake the superintendence. I offered, however, to charge myself with the superintendence, gratuitously, as soon as I should have leisure, if the Board should be willing to sanction the moderate expense which I contemplated. The Lords of the Admiralty were pleased to accept this offer ; and the books, &c. were immediately transferred to me.

The delay which has since taken place has arisen partly from the accumulation of business, produced by two severe illnesses, at the end of 1833 and the end of 1836, and partly from my unsettled state of residence. Much, however, has depended on the nature of the work itself. To go through the whole of the computations for such a Catalogue, was wholly out of the question. It was necessary, therefore, for me to satisfy myself with verifying the whole by chosen specimens of every particular part ; and, whenever, either from Mr. Sheepshanks' examination, or from my own, an error of a particular kind was discovered, to institute a systematic and complete examination for the detection of similar errors. Thus it was wholly impossible, when engaged on one kind of examination, to predict what would next be requisite. These matters, as may be easily imagined, have given very great trouble personally to myself. I have, however, the satisfaction of believing that my labour has not been unsuccessful ; and I dismiss the Catalogue from my hands with the full confidence that, though not wholly free from errors (a thing which no person experienced in such affairs can hope for), it is affected with as few as other works of the same kind.

In undertaking to prepare the Catalogue for the press, I reckoned confidently on

the assistance of Mr. Sheepshanks and Mr. Baily. On applying to them, I was not disappointed. On various matters relating to the computations, I received from them considerable assistance; and the comparison with the nomenclature of other Catalogues, with various numerical corrections suggested by the comparison, were made almost entirely by them. I wish, however, to state that, though much assistance applying to the computations has been received from these gentlemen (which I most gratefully acknowledge), no part of the responsibility of calculations falls upon them, the whole of these having been made, examined, or adopted, under my direct superintendence.

The early delays in the calculations, which have produced a twofold delay in the publication, have been attended with a consequence which I cannot but characterise as melancholy. Scarcely a single person originally concerned in the work now survives. Mr. Groombridge, the amiable partner of his domestic cares and his scientific anxieties, the artist who constructed his instrument, his neighbour and astronomical friend (the late Astronomer Royal), the secretary of the Board of Longitude, the principal computer at first employed, all are dead. And this circumstance throws a cloud of obscurity over much of Mr. Groombridge's labours. To procure information as to the earlier stages of the observations and computations, will now be nearly impossible. And even with regard to the later parts, the distance of Mr. T. G. Taylor, and the nature of the transactions which have taken the work out of Mr. H. Taylor's hands, make it extremely difficult to obtain any sufficient account.

Against these disadvantages I have struggled as well as I was able, assisted, in the first instance, by Mr. Sheepshanks' examinations, and afterwards by such hints as could be gathered from the manuscripts. And I shall consider myself richly repaid for my trouble, if I shall be judged to have contributed, even in a small degree, to do justice to the memory of Mr. Groombridge, and to place his labours in the light in which they ought to stand.

G. B. AIRY.

Royal Observatory, Greenwich,
Nov. 22, 1837.

INTRODUCTION.

THE house occupied by Mr. Groombridge during the progress of his observations is situated on the south side of Blackheath, in the row of houses called Eliot Place, and is distinguishable from the other houses of the row by the circumstance of its being (at the present time, 1837,) the only one which has a gable-end turned towards the road. The observatory was a small building attached to the western side of the house. Its position, with regard to the Royal Observatory of Greenwich, is a little to the east of south; the difference of latitude, by the geodetic measures of Mr. Groombridge and Mr. H. Taylor, being $35''\cdot23$, or $35''\cdot37$; and the difference of longitude, $0^{\circ}\cdot65$; as stated by Mr. H. Taylor.

The instrument employed was a transit-circle, constructed by Troughton. Of this admirable instrument, descriptions, illustrated by engravings, will be found in Rees's Cyclopædia, article *Circle*, and in the second volume of Pearson's Introduction to Astronomy. From the former of these works, the following account is extracted, with no other alterations than those which the want of an engraving renders necessary here.

“The circle, which is four feet in diameter, and formed principally of hollow cones, is framed upon a strong axis, three feet in length, and consists of two complete circles, fastened together by many braces of the shape of the letter X. The telescope, five feet long, and three inches and a half aperture, crosses the middle of the axis, and passes between the two circles, to the bodies of which it is attached. Each of the circles has a hoop, or edge-bar, at its back, to give it strength, and is further braced by many parts, which tend to unite the two together. There also passes through the axis another tube, at right angles to the telescope: this forms part of the plumb-line apparatus, to be described hereafter. The axis is supported at its extreme ends on the top of two stone piers, about five feet four inches high; the pivots of the axis rest in angles formed in brass-work, which is cemented to the tops of the stones. The angle at one end is acted on by a screw, which gives it a very slow motion vertically, for the purpose of adjusting the axis to be horizontal; and a similar screw, at the other end, gives a similar motion for bringing the plane of the circle into the meridian. The figure of the stone piers is prismatical, and their inner

surfaces, 27 inches apart, are parallel to each other, and perpendicular to the horizon. The circle is divided on both sides into degrees, and every 5'. Upon the ends of two strong horizontal bars, attached to the piers, are fixed four micrometer-microscopes, two on each side, exactly in the horizontal diameters of the circles : these subdivide the divisions of the limbs to single seconds, and are the indices by which the values of the observations are read off. Another microscope, in a vertical radius of the circle, passes through the lower part of one pier, and, from its situation, is supposed to be steadier than the other parts. It is useful for examining the accuracy of the divisions, and for detecting small motions in the more exposed parts of the instrument. Upon the axis, half way between the centre and pivots, are soldered and turned two rings. Immediately below, there is cemented into the inner surfaces of the stones, an apparatus, which, by means of a spiral spring, enclosed in a tube or barrel, is made to push up a roller against those rings, so as to sustain almost the whole weight of the circle, and thereby to relieve the pivots of the axis and the angles from unnecessary pressure.

“ On the inner surface of one pier is fixed a frame, which supports the usual apparatus for quick and slow motion. This, in the east or west direction, is extremely pliable ; but, in the direction of the meridian, furnishes a stout resistance. It is easily got at when the observer is looking to north or south ; and in those cases where the milled heads are out of his reach, a jointed handle assists him very conveniently. When the instrument is reversed, this apparatus engages with the opposite limb. A small stool is sometimes placed between the two piers, below the centre of the instrument. On its top is the water-vessel for the plummet to swing in : this vessel may be raised or depressed an inch or more, by a rack and pinion, to suit the length of the plumb-line. The telescope, being turned round to the horizontal position, brings the plumb-line tube, mentioned before, into a vertical one. The plumb-wire hangs from an angle at the upper end, against which it is drawn into close contact by the weight below, and is here considered as depending from a fixed point. At the lower end, the main tube is crossed at right angles by two smaller tubes, one of them parallel to the telescope, the other parallel to the axis. At one end of each is placed a luminous point, formed by a fine round hole in a brass pin, which is set in a diaphragm of mother-of-pearl : a lens in the same tube forms an image of the luminous point upon the plumb-line, in the axis of the main tube. These are viewed by eye-glasses in the opposite ends of the crossing tubes, by which the plumb-line is seen directly passing through the image of the luminous point, which appears like the disc of a small planet. The tube which is parallel to the telescope regards the axis, and that which is parallel to the axis regards the reading microscopes. By adjustments in the former, and reversing the position of the instrument, the axis may be set truly level ; and by similar adjustments in the latter, and the same means, the reading microscopes are brought to shew the true zenith

distance. It should have been mentioned, perhaps, sooner, that a small pincher takes hold of the lower end of the plumb-line, the weight of which is sufficient to pass the wire through the main tube, having a hook at the lower end, by which it is connected with the plummet. A cap screws into the lower end of the main tube, furnished with a bolt for securing the pincher, thereby preventing the plumb-line, when out of use, from being entangled or broken. By these means the plumb-line is always in its place, ready for use, and the parts of the instrument are verified thereby in a few minutes.

“ The mechanism of the eye-piece of the telescope is interesting, and in many respects new. The eye-glass, by touching a lever which is connected with a pinion, is carried along parallel to the axis, and readily set opposite any of the wires in observing a transit. This motion may in a moment be changed into a vertical one, while the upper and lower limbs of the sun or moon are brought in contact with the declination wires. At about half the mean diameter of the sun from the central horizontal wire, is a fixed wire on one side, and on the other side a movable one, all parallel. The latter is acted on by a micrometer screw, which marks the quantity of motion by a nice graduation, crossing the central wire a little way; but in its proper direction measures about 40'. By these contrivances, while the right ascension of the sun or moon is observed without the loss of a single contact, one limb may be brought to the fixed wire, and the movable wire set to the other limb, and the whole may be read off after the observation is finished. A spirit-level, half the length of the axis, hangs upon two pivots, which project from two cocks screwed fast to the axis: on these it turns, and by its gravity keeps the right side up, and thus shews the level of the axis in every position of the telescope. Another level hangs upon two pivots, which are attached to the eye-end of the telescope. This, on being brought to a horizontal position, will verify the adjustments of the microscopes and other parts more quickly than the plumb-line: it is not, however, so accurate. The axis is perforated, and by an illuminator, placed at a proper angle in the centre, the light of a lamp placed opposite one end of the axis is reflected to the eye, and shews the wires by night. The quantity of light is regulated by letting it pass through glasses differently coloured. Other parts (such as the circular plates at the object-ends of the microscopes, furnished with universal motion, for illuminating the divisions of the limbs), mostly common to all instruments, do not require particular notice. The *reversed* adjustment and *reversed* observation are affected by carefully lifting the whole circle out of the angles of bearing, and returning it when the ends of the axis are reversed.”

To this account it is proper to add, that the circles were divided by Troughton, according to the method described by him in the *Philosophical Transactions* for 1809. There can be no doubt, I conceive, that the instrument, at the time of its erection, and for several years afterwards, was the finest in the world.

I am not able to state whether the figures upon the graduations proceeded in the order $1^{\circ}, 2^{\circ}, 3^{\circ}, \dots 90^{\circ}, 1^{\circ}, 2^{\circ}, 3^{\circ}, \&c.$ (four nineties proceeding in the same order), or whether they proceeded in the order $6^{\circ}, 5^{\circ}, 4^{\circ}, 3^{\circ}, 2^{\circ}, 1^{\circ}, 0^{\circ}, 1^{\circ}, 2^{\circ}, 3^{\circ}, \&c.$ (four nineties alternately reversed in order). Neither can I state whether the micrometers of the microscopes had two graduations increasing in opposite directions. I have not had an opportunity of inspecting the instrument in its present state; and it is probable that, from the changes which have been made in it, no inference could be drawn as to its condition during Mr. Groombridge's use of it. The instrument is now in the possession of Sir James South.

I have understood that the transit circle was adjusted by a meridian mark on the south wall of Greenwich Park;* and, upon examining the wall, there may still be seen at 100 yards distance (nearly) from the nearest obtuse angle of the south-west corner of the park, the remains of a large patch of black paint, below which, in three places (in the same vertical) are marks of the insertion of some substance in the wall. The position appears to correspond well with the meridian of Mr. Groombridge's Observatory. I think it, therefore, extremely probable that this was the situation of the meridian mark. In some of the books (No. I. below) I find allusions to a southern mark; but it was probably temporary, as I am assured that Mr. Groombridge had no fixed southern mark.

The transit clock (according to the statement of Mr. H. Taylor) was made by Holmes of London. Its rate appears to have been subject to gradual changes of sensible amount; but, in general, the change from day to day was small. Thus, in the period from 1806, June 11, to 1807, April 5, the clock's smallest daily gaining rate was $-0^{\circ}22$ on June 11, and its greatest rate $+1^{\circ}52$ on March 8. The pallets were then oiled. Then, from April 6 to December 13, the smallest rate was $+0^{\circ}22$ on April 19, and the greatest $+1^{\circ}71$, on December 13. The pallets were again oiled. Then, from 1807, Dec. 14, to 1808, October 1, the least rate is $+0^{\circ}30$ on January 22, and the greatest $+2^{\circ}00$ on October 1. The pallets were then oiled again. Each of these rates is deduced from a single star: the true inequality of rate was probably less. It is however, I think, sufficiently clear, that the principal part of this inequality depended upon the reduction of the arc of vibration from the increase of friction in the clock. No instance has caught my eye in which the change of rate from day to day (as shewn by a single star) exceeded $0^{\circ}50$; and, in general, it is very much less. So far, therefore, as depends on the steadiness of the clock-rate, I conceive that the right ascensions may be considered as having the utmost practicable accuracy.

* For the information of strangers, it may be necessary to state, that the higher or southern side of Greenwich Park is part of the same table-land which forms Blackheath; and that the Royal Observatory in the centre of the park, is on the northern brow of this table-land, and Mr. Groombridge's house on its southern brow.

I shall now proceed to give a general account of the books and papers which have come into my hands.

No. I. A thin folio, stitched, marked "Groombridge's Magnitudes." The water-mark of the paper is 1797. It contains an approximate general catalogue of 94 bright stars, described by the parts of their respective constellations; a catalogue of 19 bright circumpolar stars, similarly described; a catalogue of 53 circumpolar stars, with some pencil computations from Hevelius, with Flamsteed's numbers and Bayer's characters (the places of all these are for 1800); and a catalogue of about 770 circumpolar stars (for 1803), a very few of which are from Bode's great catalogue (the last 37 stars are not, like the rest, in the order of right ascension). The magnitudes of the stars are marked, and have, in many instances, been altered by Mr. Groombridge: and this book, therefore, has been considered as authority for his estimation of the magnitudes. Opposite the names of many of the stars (perhaps one third of the whole) are pencil marks; the number of the marks corresponds, as far as I have examined, with the number of observations in right ascension in the Catalogue now published. The book also contains, Observations for the runs of the micrometer-microscopes; Observations for Collimation in Declination (by once observing the north mark and the south mark with the illuminator west, then reversing the instrument, and making the same observations with the illuminator east): there is no date to these observations, and I cannot find in the Zenith-distance book that the value of the error of collimation here obtained has ever been used; Observations of the distance of the fixed wires, and of the value of the micrometer-screw; and various astronomical memoranda not relating to the Catalogue.

No. II. Twenty loose sheets of paper, water-mark 1806, headed, in Mr. Groombridge's hand-writing, "Stars for the Catalogue." The first part of it is a catalogue of about 560 circumpolar stars, in the order of right ascension, without separation of constellations, commencing with 36 *Draconis*, R.A. $18^h 12^m 41^s$, and proceeding through the twenty-four hours to *Herculis* Bode 403, R.A. $17^h 58^m 35^s$. The second part is headed, "Stars from Bode's Catalogue;" and contains, arranged by constellations, the principal part of the stars of Bode's Catalogue, which are included in the zone to N.P.D. 50° or 51° . A few of the stars are set down twice. The whole number is about 2200. Many of the stars of No. I. which have no pencil marks are included in No. II. Nearly the whole of the stars of No. II. have pencil marks corresponding to the number of observations: the magnitudes are also marked and corrected. Interlined are the small stars preceding and following the stars first written down, distinguished by the marks *p* and *f*: these also have pencil marks for the observations, and have the magnitudes written down. It is evident that Nos. I. and II. (but especially the latter) were Mr. Groombridge's working catalogue, or list of objects to be observed; and that they were afterwards used as

convenient places for the temporary registration of the number of observations made on each object, and of its magnitude.

Of the stars in these lists, twenty-eight having the letter N, in red ink or in pencil, written opposite to their names in the lists, are omitted in observation; and thirty-one without any peculiar mark are also omitted.

No. III. The Transit Book. This is a large folio, ruled with seventy lines on each page, and containing, in the whole, 183 leaves nearly full of observations on both sides. The date of the first observation is 1806, June 11, and that of the last 1823, Feb. 26. Many of the later observations relate entirely to the determination of R.A. of planets. After 1816, June 12, there is a hiatus of observations of five months; and here is written in pencil (not by Mr. Groombridge), "End of Catalogue." This, however, is incorrect, as several important observations for the Catalogue were made in 1819.

Besides the occasional notices of cleaning the clock, oiling its pallets, winding it up, or letting it run down, &c. the book contains the following remarks:

"The axis of the instrument reversed" on 1806, Sept. 29; 1807, Jan. 12, Feb. 23, May 11, June 2, Sept. 19; 1808, May 2; 1809, Feb. 18, Nov. 26; 1810, Nov. 17; 1812, May 13; 1813, May 8; 1818, June 5; 1821, Jan. 12.

1808, Nov. 30. "Having struck and moved the axis in azimuth $1^{\circ}34'$, the correction of the error in R.A. is calculated for each star." The corrections are accordingly written in red ink by the side of the transits.

1810, May 31. "Henceforward the observations will be reduced by my new tables of aberration, precession, and nutation; and the epoch will be 1st Jan. 1812." Up to this date the mean places were reduced to 1st Jan. 1807. A few after this time are reduced to 1807; but I believe that they are only stars which had also been observed before this time. The tables previously used were, I suppose, Maskelyne's.

1810, Oct. 18. "Henceforward the mean of the five wires will be reduced to the centre by an equation, the quantity whereof is $-\frac{1}{700}$ of an interval when the illuminator is east, $+\frac{1}{700}$ when west."

1812, April 8. "Henceforward the Right Ascension of Dr. Maskelyne's 36 stars from the Catalogue 1805, corrected for the error in the Greenwich Transit." I presume that Dr. Maskelyne's first Catalogue had been used to this time.

The Transit-wires were five in number. Observations, however, were seldom made on all the wires, except those of the stars used for correcting the clock. Thus, in a page, taken at hazard (1812, Sep. 11 and 12), of 70 transits, there are 4 on 1 wire only, 62 on 2 wires, none on 3 wires, none on 4 wires, 4 on 5 wires. These 4 were entirely clock-stars. The reduction of these broken transits must have been

a troublesome operation ; all traces of it are, however, lost, except in the latter part of the book, where there are many pencil-figures which seem to be the declination and the corresponding mean value of one interval of wires.

With regard to the error of collimation with reference to transits (that is, the perpendicularity of the telescope to the axis of rotation), there is no information whatever. I presume that it was adjusted by means of the meridian mark.

With regard to the Level Error, there is no distinct account ; but there are written with red ink in the margin of every page, and in general to every day, figures with the letter E or W, which I have no doubt shew the elevation of one end of the axis. Thus, 1806, June 11, has the marginal note $\cdot 447$ E ; June 12 has $\cdot 417$ E ; June 14 has $\cdot 123$ W. The quantity very rarely exceeds 1·000 ; and I am not aware that in any instance it amounts to 2·500. If these quantities are expressed in seconds of space, it is evident that the screws for adjustment were very frequently used.

With regard to the Azimuthal Error, there is no information except that which is to be derived from the double transits of *Polaris* ; and this is satisfactory. The following are the only days of the first year on which double transits were obtained (with the middle wire only). I set down by the side of them the excess of the seconds at the lower passage over those at the upper passage, and the supposed level-error for the same time.

1806, June 12	+ 13·0	$\cdot 417$ E.
14 & 15	+ 20·0	$\cdot 123$ W, $\cdot 876$ E.
19	+ 11·0	$\cdot 223$ E.
23	+ 4·0	$\cdot 107$ E.
July 17	+ 1·0	$\cdot 244$ W.
Oct. 19	+ 2·5	$\cdot 130$ E.
Nov. 5	+ 2·0	$\cdot 079$ E.
29	+ 0·3	$\cdot 190$ W.
1807, April 26 & 27	+ 2·5	$\cdot 000$, $\cdot 068$ E.

From the order of these numbers, I think it most probable that the month of June 1806 was employed in settling the position of the meridian mark ; and that as the last observation of June and that of July shewed that it required no sensible alteration, the instrument was afterwards adjusted by the mark thus fixed.

The number of clock-stars observed on a single evening is usually three or four.

The following extract will serve as a general specimen of the way of entering the observations and reductions ; which is followed without any alteration (except the omission of the numbers that appear to refer to the level, and the adoption of 1812 and 1818 by Mr. Groombridge, and 1810 by Mr. H. Taylor, for epoch instead of 1807), from the beginning to the end of the book.

given by the clock stars, and the mean R.A. of other stars deduced from the observations. The latter of these, in general, are written with red ink.

From the neatness and regularity with which the transits are entered, as well as from the occasional intermixture of other matter (as eclipses expressed in *mean time*; observed right ascensions and polar distances of a comet, both expressed in *arc*, &c.), it is evident that this book cannot be considered as original, though, perhaps, very little removed from it. The original observations, I believe, were written on slates, or on small pieces of paper, now probably destroyed. No trace whatever of the calculations for completing the transits, computing the apparent right ascensions of the clock stars, or reducing the apparent places of the small stars to mean places (so far as that was done by Mr. Groombridge), exists among the papers in my hands; nor even for the calculations of the latter class, which were performed by other persons, is there, in any instance, more than a few of the radical numbers. To this I shall again allude.

The rude transits, the deduced transit over the middle wire, the number of days and daily rate, the clock errors, and the deduced apparent right ascensions of small stars and planets, from beginning to end, are entered in Mr. Groombridge's handwriting. The mean R.A. are also in his handwriting as far as 1811, March 16, where entries of mean R.A. commence in the handwriting, I believe, of Mr. T. G. Taylor. For a short time, however, Mr. Groombridge's entries still occupy the principal part of the column; and they are to be found occasionally to the end of the book. With 1812, October 8, commence entries of mean R.A. in the handwriting, I believe, of Mr. H. Taylor. Mr. T. Taylor's are, however, the most numerous for some time afterwards. The epoch for Mr. H. Taylor's mean places is generally 1810.

I have no reason to think that the computations made by Mr. Groombridge have undergone any revision since the termination of Mr. T. G. Taylor's superintendence. After carefully examining every part of the book, only two instances have been found in which alterations have been made by Mr. H. Taylor. The first of these is on the eleventh page of the observations, 1806, Oct. 19, where Mr. H. Taylor has erroneously changed the clock rate $+0.36$ (formed by simple subtraction) to $+0.32$. The second is an alteration of 10^s in a transit. Mr. T. G. Taylor has corrected twelve transits for errors (generally of 1^s) arising in different ways. That no extensive examination had ever been made, I conceive to be certain, from the circumstance that, when the books came into my hands, I did, from the most cursory examination of the results, discover two days (1813, May 8, and 1815, Feb. 27) on which the clock corrections had been applied 1^s wrong to every transit, and many instances in which the reduction of the wires, the application of clock correction, or the reduction from apparent to mean place, was, at least, 1^s wrong. The whole number of transits corrected, under my superintendence, for errors arising thus, is ninety-five, besides a great number of alterations in star corrections occasioned by erroneous

assumption as to the side of the zenith. They are marked in the book with the initials G. B. A. or J. H. (Mr. John Hartnup having been employed by me on this examination.)

No. IV. The Zenith Distance Book. This is a very large folio, water-mark 1804, ruled with seventy-two lines on each page, containing 188 leaves full of observations on both sides. (The last leaf is a loose sheet.) The date of the first and last observations is the same as for the transits; but there is some difference between the objects observed on the same day, as recorded in the two books. The Transit Book contains many observations of clock-error stars, to which there are none corresponding in the Zenith Distance Book. The latter contains many observations of circumpolar stars, both above and below the pole, especially the latter, on occasions when the transit was not observed.

The following are the principal notices in this book:—

- 1806. June 11. Illuminator to the East; collimation, South + 18·54, North — 18·54. (This correction is applicable to the zenith distances.)
- June 27. Illuminator to the West; collimation, South — 18·54, North + 18·54.
- July 14. A new adjustment; illuminator to the East; collimation, South + 17·15, North — 17·15.
- Sept. 28. Illuminator to the West; collimation, South — 17·15, North + 17·15.
- Dec. 29. A new collimation, South + 1·55, North — 1·55. (These figures are marked out by a stroke with red ink.)
- 1807. Jan. 12. Illuminator to East; collimation, South — 1·55, North + 1·55.
- Feb. 15. Illuminator to West; collimation, S. +, N. — (no figures).
- May 11. Illuminator to East; collimation, S. +, N. — (no figures).
- June 2. Illuminator to West; collimation, S. —, N. + (no figures).
- Sept. 19. Illuminator to East; collimation, S. +, N. —.
- 1808. May 4. Illuminator to West; collimation, S. —, N. +.
- 1809. Feb. 22. Reverse the axis; illuminator to East.
- July 20. The microscopes altered, the wires to move instead of the object-glass. (I presume this refers to the sliding-adjustment for coincidence of the place of the wires with the place where the image of the divisions is formed.)
- Nov. 26. Reverse the axis; illuminator West.
- 1810. May 31. Henceforward the observations will be reduced by my new Tables of Refraction, Aberration, Precession, and Nutation; and the epoch will be 1st January, 1812.
- Nov. 23. Reverse the axis; illuminator East.
- 1811. May 26. Henceforward a gauged barometer by E. Troughton.
- 1812. May 13. Reverse the axis; illuminator West.
- 1813. May 8. Reverse the axis; illuminator East. (Between this and the next, I cannot find mention of any reversion.)
- 1821. Jan. 12. Reverse the axis; illuminator East.

This list of reversions corresponds with that in the Transit Book, as far as they go (the nearest following day being set down by me), but neither appears to be complete.

The following Extract from the Zenith Distance Book will shew the way in which Mr. Groombridge recorded the observations.

Day of the Month.	Zenith Distance.	N.W.	S.W.	N.E.	S.E.	Refraction.	Zenith Distance Corrected.	Baro- meter.	Thermom.			Mean. Jan. 1, 1807.
									In.	Out.		
1809. Dec. 11.	74° 25'	10"3	10"2	10"0	10"8	' ..	° ' "	29.37	43.5	42	Sun	
	— 15	54.00	..	..	..	3 18.61	..	..	..	..	☉ Upper Limb	
	+ 13	51.74	..	..	..	3 25.86	..	..	..	..	☉ Lower Limb	
N—	+ 2	39.94	..	Rev.	2.588	..	74 28 57.41	..	..	..	☉ Centre	
S+	0 59	1.4	0.9	1.1	1.2	0 0.98	0 58 56.11	..	..	..	β Draconis	58 54.59
	0 3	12.0	12.1	12.3	12.2	0 0.05	0 3 6.18	..	..	..	γ Draconis	2 55.90
	12 50	40.8	41.7	41.4	41.6	0 12.98	12 51 0.37	..	..	..	α Lyræ	51 22.70
6.02	6 51	6.0	5.8	6.0	5.1	0 6.87	6 51 18.61	29.41	43	41	α Cygni	52 15.86
	8 16	58.4	58.9	58.0	58.3	0 8.31	8 17 12.73	..	..	..	ξ do.	18 14.59
	19 12	22.4	22.1	22.5	22.4	0 19.88	19 12 36.21	29.42	..	..	Cephei B 91 <i>f</i>	11 29.09
	7 44	48.3	48.7	48.2	48.4	0 7.77	7 44 50.15	..	..	..	do. B 97 <i>p</i>	43 43.72
	7 51	21.6	21.9	21.7	21.6	0 7.88	7 51 23.56	..	..	..	do. B 97 <i>f</i>	50 17.13
	0 4	49.0	48.8	49.0	48.4	0 0.08	0 4 42.86	..	..	..	do. B 134	3 32.52
	0 3	50.4	50.0	50.5	50.1	0 0.06	0 3 56.33	..	..	..	do. B 134 <i>f</i>	5 6.88
	0 12	38.6	38.9	38.8	38.7	0 0.20	0 12 44.97	..	..	..	do. B 134 <i>ff</i>	13 55.73
	7 26	4.0	4.3	3.9	4.2	0 7.46	7 26 5.54	..	42.5	39	ι do.	24 51.04
	7 29	10.7	10.6	10.4	10.2	0 7.51	7 29 11.96	..	..	..	ι do.	27 57.46
	13 43	2.2	2.1	2.0	2.3	0 13.96	13 43 10.09	..	..	..	do. B 198	41 53.12
	2 9	2.7	2.6	2.4	2.1	0 2.15	2 9 10.62	..	..	..	7 Lacertæ	10 26.06
	12 48	10.0	10.2	10.7	10.3	0 13.00	12 48 29.32	..	..	..	8 do.	49 42.82
	0 53	33.6	33.4	33.2	33.0	0 0.89	0 53 40.21	..	..	..	9 do.	54 56.41
	12 13	19.3	19.5	19.4	18.9	0 12.39	12 13 37.68	..	..	..	12 do.	14 51.75
	21 52	19.0	19.7	19.3	19.0	0 22.98	21 52 36.21	..	42	..	Cephei B 234 <i>p</i>	51 16.08
	21 57	49.5	49.6	49.3	49.7	0 23.08	21 58 6.58	..	..	..	do. B 234	56 46.33
	22 5	22.5	22.2	22.6	22.3	0 23.23	22 5 39.61	..	..	..	do. B 234 <i>f</i>	4 19.26
	27 53	33.4	32.8	32.8	33.5	0 30.29	27 53 57.39	..	..	..	do. B 243	52 36.33

The readings set down for the sun are the distances of the two fixed wires from the central wire (described in the account of the instrument), with the micrometer revolutions and value in arc for the measure of the distance of one limb of the sun from one fixed wire (the other limb having been brought to the other fixed wire). The readings for the stars marked *p* and *f*, shew that they are generally stars which passed in the field of view when the telescope was set for the star to which they are referred. The number in the first column is the index error, deduced, probably,

from the first five stars. The algebraic sign above it denotes the way in which it is to be applied to the numerical value of the zenith distance, given by the mean of microscopes.

The day, the index error set down in the column for the day, the degrees and minutes, the seconds for the four microscopes, the barometer and thermometers, and the refractions, are entirely in Mr. Groombridge's hand-writing, from beginning to end. The true zenith distances are also entirely in his hand-writing, excepting only about fifty-eight in the beginning of the year 1816. The mean zenith distances are entirely in his hand-writing to 1811, March 1, when entries commence (at first sparingly) in the hand-writing of Mr. T. G. Taylor. Mr. H. Taylor's entries of mean zenith distance commence in 1812, October 9.

The following points appear to be important in estimating the probable liability to error in these deductions.

The readings of the four microscopes, as set down in the earlier parts of the book, have that amount of discordance which may usually be expected with the most careful observations. After the middle of 1807, however, the accordance between the microscopes becomes such as never was attained with any instruments. To explain this, I have been informed by Colonel Colby, R. E. (who was well acquainted with Mr. Groombridge's habits of computation, &c.), as well as by other persons, that it was Mr. Groombridge's custom to alter the microscope readings in such a manner as to preserve their sum unaltered. Mr. Groombridge, I believe, prided himself on his readiness at performing calculations mentally; and trusted entirely to his power of altering the figures in the way which I have described, without introducing any error. It can, however, scarcely be doubted, that errors have, in some instances, been thus produced in the mean.

The next point is, that there is no recorded difference in the nature of the readings for objects on different sides of the zenith. Now, the least consideration of the method of using the micrometer-microscope will shew that, either there must have been two readings on the micrometer-heads, increasing in opposite directions (which would bring a constant risk of mistake), or, if there were only one reading, its complement must have been taken mentally for stars on one side of the zenith (which would be very liable to error). I am inclined to believe that the latter was the method employed, as I find the microscopes, in some places, altered throughout by 10"; (for instance, December 9, 1810, Cephei B 289). Whichever method was used, the chance of error, to most observers, would have been considerable.

The third point is, that the zenith distance only is given, the side of the zenith being in no way mentioned, except in a very few instances where the star passes very near the zenith. It is true that the side of the zenith (as understood by Mr. Groombridge) may be inferred from his true zenith distance, by subtracting the mean of the microscopes and the refraction, and thus discovering how the index error

is applied by him. But where a star passes very near to the zenith, there is a possibility that Mr. Groombridge may himself have mistaken the side. And even where he has not, he may have committed an error in applying the index correction. There can be little doubt that both these circumstances have occurred. Several apparent zenith distances have been altered by Mr. H. Taylor, Mr. Groombridge's figures being totally erased (I suppose under the immediate inspection of Mr. Groombridge); and I have myself found instances in which the error was indubitable. I will here collect all the observations in which the zenith distance is less than $1'$; the errors in the determination of the side of the zenith being more likely to escape detection in such observations than in those at a greater distance.

Persei Bode 51, No. 525, observed 1810, Jan. 14 and 15, Feb. 4, Nov. 17, 25, and 30; assumed to be north of the zenith.

Persei Bode 114, No. 611, observed 1809, Dec. 11; 1810, Jan. 14 and 15, Nov. 17, 25, and 30; the apparent place assumed to be north; the mean place, 1807, south.

Camelopardi Bode 22 *p*, No. 819, observed 1811, Feb. 1, 3, 19, 22; assumed to be north.

Camelopardi Bode 22, No. 821, observed 1811, Jan. 18, 19, and 27, Feb. 1 and 3; assumed to be north.

Draconis Bode 170, No. 2559, observed 1810, Aug. 31, Sept. 2, 8, 9, 10, and 21; assumed to be south.

Lacertæ Bode 23, No. 3722, observed 1810, Sept. 8; 1811, Oct. 6, 17, and 19; assumed to be south in the two former observations, and north in the two latter.

Lacertæ Bode 42, No. 3793, observed 1810, Sept. 9 and 26, Oct. 4, 13, and 30; assumed to be south.

For the third and fourth of these stars, as well as for Camelopardi Bode 22 *f*, No. 830, the original figures (except the microscope readings) have been completely erased, and new ones written by Mr. H. Taylor, in every observation. The last-mentioned star is observed, on 1811, Jan. 19 and 27, Feb. 1 and 3.

The following statement will shew that no distinct examination of Mr. Groombridge's computations has been made by the subsequent computers.

In five instances (besides those above mentioned) the refraction, or the apparent zenith distance, has been altered (by erasure) by Mr. H. Taylor. I should suppose that these erasures were made under Mr. Groombridge's inspection. They all occur in the first half-year. In two instances, 1806, July 14 and Oct. 5, the index error has been altered by Mr. H. Taylor; but the altered index error has not been used in computing the observations. I have reason to think that the alteration was made after the Catalogue was printed. One observation is altered $1' 10''$. Many erasures are made, with corrections by Mr. Groombridge: to some of these the word *error* is written by Mr. H. Taylor; I know not whether to suggest the error to Mr. Groombridge, or to express a doubt of his correction.

Ten alterations were made by Mr. T. Taylor, of which eight were for errors as to the side of the zenith, and two for errors in minutes and tens of seconds.

Eighty-six alterations have been made under my direction (besides alterations of minutes and tens of seconds), of which twenty-six relate to errors in the apparent place, and the remainder to independent errors in the deduced mean places. The

greater part of these are occasioned by errors with regard to the side of the zenith. No systematic examination of the application of index error was made for the detection of these.

I have only to remark further upon the way in which I conceive Mr. Groombridge to have proceeded in the reduction of his observations of zenith distance.

In the first part of the book, there is given (written across the page) an error of collimation, or error of position of the wire with respect to the divisions of the circles, as mentioned above. Besides this, there are in the margin figures written in red ink, with the indication, N. +, S. -, or N. -, S. +. This system continues to 1806, Dec. 28, after which no error of collimation is written across the page (except in one instance, of which no use is made), but figures, or the sum of two sets of figures, are put down in the margin to the end of the book. Now, upon examination, it is found that, in the first part of the book, the apparent zenith distance is formed by using the error of collimation with the mean of the microscopes and the refraction; and that, in deducing the mean zenith distance from the apparent zenith distance, the number expressed in red-ink figures is combined with the star corrections. In the rest of the book, the red-ink figures are used to form the apparent place, and the star corrections only to form the mean place. Upon examining the red-ink figures, it is found that, in both parts of the book, they are index errors, determined by comparing the resulting places of certain stars with their places in some stage of a Standard Catalogue (to be described hereafter, No. V.). Thus, the whole of the results in the book are dependent on a Standard Catalogue. Moreover, there exists among Mr. Groombridge's papers one headed "Observed Zenith Distances of Stars for Refraction." Upon examination, it appears that these are the apparent zenith distances which were to be reduced to mean zenith distances, in order to supply the data for the correction of refraction in the paper printed in the Philosophical Transactions, 1810 (the stars being the same, and the number of observations generally the same); and these apparent zenith distances are taken from the Zenith Distance Book, beginning with the very first day, and extending for Polaris S.P., and probably for other stars, as far as the middle of 1808, and (in the first part of the book) corrected by applying the red-ink figures. Thus it appears that even the data for refraction were obtained by the use of the standard catalogue. And, on further examining the standard catalogue, it is found that the first, and almost illegible value, for the standard stars, is that which is used to determine the index errors, for two or three years at least; and that the second value is identical with the mean zenith distance (as far as the stars are the same) in the memoir, Philosophical Transactions, 1810. The whole of the discoverable process is, therefore, one of reliance on a successively corrected standard Catalogue; yet the investigations of refraction, &c., necessarily imply reference to independent index errors obtained

without assuming the correctness of any star-places. I imagine Mr. Groombridge's method, therefore, to have been the following: First, the relation of the position of the wire to the zero of the divisions, was found, by observation of a terrestrial mark in reversed positions of the instrument (of this there exist four separate determinations). Next, the relation of the position of the microscopes to the zenith, was found by observations of the plumb-line in reversed positions of the instrument (of this there exists no trace, but, as it was the only way of referring to the direction of gravity, it must have been used). Thirdly, as there is no reason to suppose that any observations were made, except those in the Zenith Distance Book, these observations must have been reduced to some extent (perhaps to the month of July 1807, as observations of all the stars whose places are altered in the catalogue occur before that time) by the application of the two corrections just mentioned; and a series of strictly independent zenith distances must have been thus obtained, which were reduced with Bradley's altered refractions (the first table alluded to by Mr. Groombridge, *Philosophical Transactions*, 1810, as used by him before making a correction from observations), and from which the mean places of the first stage of the Standard Catalogue were deduced. Fourthly, that these mean places were used, with the same table of refractions, to form the index errors which still remain in the books, and thus to form a new set of zenith distances from observations extended over a longer period, which were used both for improving the Standard Catalogue (still using the same refractions) and for correcting the refractions; after which another alteration of the Standard Catalogue would be necessary. This process is strictly legitimate; preserving the general mean of former determinations, while the individual determinations are altered. It is precisely the same as that commonly used for correcting the right ascensions of fundamental stars.

The mean zenith distance appears in all cases to have been formed from the apparent zenith distance, by corrections equivalent to those given by Groombridge's Tables, *Astro. Soc. Mem. Vol. I.*

No. V. The Standard Catalogue. This is a single leaf, without date on the watermark, headed "Zenith Distance of Stars, 1 Jan. 1807, for Coll." and containing the minutes and seconds of zenith distance for 151 stars, in the order neither of right ascension nor of polar distance. Polaris is the only one whose place below the pole is given; but, on the south side, there are many stars at considerable zenith distances, as Fomalhaut, Sirius, α Libræ, α Capricorni, Spica, α Hydræ. The stars which are not circumpolar appear to have been added long after the others, and their seconds are not altered, as those of the circumpolar stars. For about 40 of the last-mentioned class, the seconds have been written down at least three times, and for Polaris five times. The first value is with difficulty legible; but where it can be ascertained, it is evidently the number that has been used in computing the index error in 1806 and 1807. The second value is written over this in strong

characters ; it is in every instance (as far as they go), except for Polaris, the same as the number used for the zenith distance at upper passage, in the table attached to the paper on refraction, Phil. Trans. 1810. Of the fifty stars in that paper, twelve are wanting in this catalogue. The third is written in red ink by the side ; it is (as I shall mention) the value from which one of the values of polar distance is afterwards formed. The successive changes of these numbers I conceive to have arisen from the changes in the tables of refraction, as well as from the repeated and renewed discussion of the observations, already alluded to.

No. VI. The Mean Sheets. These are thirty-eight sheets of foolscap (watermark of the first 1824), for the most part completely filled on both sides with collections of the separate results, as to the mean right ascension and mean zenith distance of each star ; with the mean of all the separate results. The first five sheets, and parts of two others, are in Mr. Groombridge's handwriting ; the others in the writing of Mr. T. G. Taylor and Mr. H. Taylor. The arrangement of the results is different in different parts ; but the only points worthy of remark here are the following. First, the results for the principal stars, and all those which in the Book of Results are included in catalogue A, do not appear here ; the sheets commencing with the first star of catalogue B. Secondly, the mean result of mean right ascensions of many of the stars entered in Mr. Groombridge's handwriting, especially of those near the pole), has a correction applied to it of which no account is given, but which may, probably, be due to the supposed error of level, to which I have alluded under No. III. The agreement of the separate results in right ascension is generally very close. In the polar distances there is sometimes a discordance of 8" ; but I think it extremely probable that in these cases an error of 10" has been produced from one of the causes mentioned under No. IV. In one or two instances I have thought myself justified in making an alteration of 10".

No. VII. The Book of Polar Distances. An old book of Mr. Groombridge's ; the entries relating to the Catalogue are entirely in the handwriting of Mr. T. G. Taylor and Mr. H. Taylor. They consist of the days of observation of each star, the corresponding reductions (both in right ascension and in zenith distance) from apparent to mean place, the zenith distance copied out of the mean sheets, the polar distance formed by applying the colatitude $38^{\circ} 31' 57'' \cdot 82$, and the elements for computing the reductions by means of Mr. Groombridge's tables ; but no part of the computation of reductions. The first star is Boötis Bode 277, of which the first observation is on 1812, June 6 ; this is also the first star entered in the mean sheets by Mr. H. Taylor. As the original book was not sufficiently large, a thin paper book, containing the completion of the matter, is placed in it.

No. VIII. The Book of Results. A thin folio, with eleven loose leaves of larger size inserted in the end. The watermark of the first part is 1817. Its contents are the following :

A catalogue of 52 stars, arranged in the order of polar distance (the first being Polaris, and the last α Lyrae), with the results and number of observations in two lines for each star, as reduced to 1807 and 1812. The places for 1807 have been first written in black ink; and these places correspond to the last-corrected, or red-ink zenith distances, in the Standard Catalogue (No. V.), with the application of colatitude $38^{\circ} 31' 57''.82$. The seconds of polar distance are then corrected in red-ink, and these are the numbers tabulated in a following catalogue. I can give no account of the way of obtaining the correction.

A catalogue of 69 stars, similar to the former, and similarly arranged; beginning with Ursæ Minoris, Bode 4, and ending with η Aurigæ.

A catalogue of about 800 stars similarly arranged, beginning with Ursæ Minoris, Bode 6, and ending with 65 Aurigæ. The whole are reduced to 1807; none to 1812; two or three to 1818. The seconds of N.P.D. of the whole (except those reduced to 1818) are altered in red-ink.

The first catalogue (A) of about 900 stars, arranged in order of right ascension, and reduced to January 0, 1807. It contains the number of observations in R.A., the mean R.A. 1807, the mean R.A. 1810, and the same particulars for N.P.D. Of the calculations intervening between the Observing Books and the Catalogue A, as here exhibited, no trace (as has been already mentioned) remains. The whole is in Mr. Groombridge's handwriting. On comparing it with the preceding catalogues, it appears that the observations reduced to 1807, and corrected in red-ink, are alone used; those of 1812 (generally more numerous) being neglected. Whether intention or accident may have caused this omission, I have thought it necessary in the printed catalogue to exhibit the results, as reduced to 1810, deduced from both series.

The second catalogue (B, 1st part) of about 250 stars; similar to A. The reduction to 1810 is principally in the writing of Mr. H. Taylor.

The third catalogue (B, 2d part) of about 350 stars; originally reduced to 1812, but, in other respects, similar to the last. It commences with $14^h 17^m$ right ascension (B, 1st part, having terminated at $15^h 23^m$).

The fourth catalogue (C) of about 1600 stars, from 0^h to 24^h ; similar to the last. The latter half is entirely in the writing of Mr. T. G. Taylor, excepting a few reductions to 1810, written by Mr. H. Taylor.

The fifth catalogue (D) similar to the last, principally in the writing of Mr. H. Taylor.

The sixth, seventh, eighth, and ninth catalogues, (E), (F), (G), (H), entirely written by Mr. H. Taylor, and reduced at once to 1810, without the intermediate reduction to 1807 or 1812.

The contents of this book are, in fact, only transcripts of the mean results from the mean sheets, No. VI. (excepting the places of catalogue A), with reduction to

1810. The succession of catalogues has arisen merely from the observation of new stars in successive years, following generally the order of right ascension. A very few of the stars are to be found in more than one catalogue, and sometimes entered under different names.

No. IX. Two stitched folio books, containing computations (in duplicate) of precession for the stars of the catalogue; computed after the catalogue had been brought into form by Mr. H. Taylor. The formulæ for precession in R.A. is $3^{\circ}.068 + (N^{\circ} \log = 0.12590) \times \sin R.A. \times \cotan N.P.D.$; and that for precession in N.P.D. is $-20''.045 \times \cos R.A.$

There are other detached papers by Mr. Groombridge, and several books or collections of papers by Mr. H. Taylor; but none which are of the least importance for the formation of the Catalogue.

I shall now mention generally the principal steps of revision which have been made under my direction.

The examination made by Mr. Baily and myself had led us to the belief that the part of the work most liable to doubt was that executed under the direction of Mr. H. Taylor. Indeed, Mr. Groombridge's laborious accuracy is every where so conspicuous, and Mr. T. G. Taylor's reputation as a careful computer is so high, that I never intended to examine their work in detail; and, if the Book of Results had exhibited their conclusions only, I should have adopted them at once, with none but a general and cursory examination. As it is, I have not examined Mr. Groombridge's index errors and their application throughout the observations, nor the reductions computed by him and by Mr. T. G. Taylor, except where discordance of results compelled me to examine every step of the deductions. With regard to Mr. H. Taylor's computations, it seemed necessary to make a closer inspection. The species of work most difficult to examine by general inspection, and most laborious, was the reduction of the apparent places of the stars to their mean places. For verification of this, I selected 100 stars from those which were reduced by Mr. H. Taylor, and computed their reductions in R.A. and in N.P.D. The selection included stars observed at very different times, and in very different parts of the heavens. To prevent the possibility of repetition of any error in Groombridge's Tables, I conducted the calculation by means of the log A, B, C, D, in the *Tabulæ Regiomontanæ*. The result was, that in one star only was there a sensible error; and, even in that, the discordance of results had been noticed, and the erroneous deductions had been rejected. This verification convinced me that the system which had been adopted in this, the most laborious part of the work, was good; and that the reductions might be received as accurate, except particular discordances should lead to the suspicion of special errors.

The next step was, to compare generally the separate results as to mean R.A. and mean zenith distance; and, where a striking discordance appeared, to trace it to its cause. In this examination many errors were detected.

The next step was, to examine the means of the separate results. A great many errors were found in this part of Mr. H. Taylor's work; a few, also, were found in Mr. Groombridge's and Mr. T. G. Taylor's. I may remark that, in general, an inexperienced calculator is more likely to commit errors in computations of this kind, which admit of easy examination, than in those which are more laborious, and which require a longer process for their verification.

After this a general examination was made for discovering whether the stars had been placed on the right side of the zenith, in the exhibition of the value of their polar distance. One instance of error had been pointed out by Mr. Sheepshanks: several others were discovered, of which a few were in Mr. T. G. Taylor's work. The criterion on which, in the first instance, my conclusions were founded, was the comparison with Bode's Catalogue, or with the place of the stars in the Book of Magnitudes; the latter having, as appears most probable, been used by Mr. Groombridge as a working catalogue, afforded good evidence as to the side of the zenith to which he looked for the star designated by the name which is used there. In some instances it was impossible to identify the stars with any of Bode's Catalogue; but in every instance in which there was a shadow of doubt, the application of the index error was examined. The *p*'s and *f*'s were referred to the same side of the zenith as the principal star.*

Another examination was made for ascertaining whether precession had been correctly applied in bringing up to 1810 the places of the stars which had been reduced in the first instance to 1807 or 1812. Several errors were discovered here.

In several instances stars had been bracketed together by Mr. H. Taylor, implying a belief that they were the same, though entered under different names. On examining severally the observations of each, not the smallest difficulty was found in determining the identity or non-identity of the stars.

I may remark, that many well-known double stars are contained in this Catalogue; but that their double character is in no way adverted to by Mr. Groombridge, except for those of which distinct places will be found in the Catalogue.

The application of colatitude generally was examined.

In the comparisons with other catalogues (made before several of the examinations

* In some instances in which the star corrections have been applied, and the colatitude combined, in a wrong assumption as to the side of the zenith, it has been found that the star corrections are rightly computed; and, therefore, that the right place of the star has been used in computing those corrections. It would seem in these cases that the corrections have been computed by Mr. Groombridge.

already described), several errors were detected ; but none, I believe, which would not have been discovered in the other examinations.

In all these instances, it was necessary to recompute the precessions, which had been, in all cases, computed from the places exhibited in the then printed Catalogue.

A few stars are inserted which had been completely reduced, but were omitted in Mr. H. Taylor's printed copy.

I have now only to explain the columns of the Catalogue in the form in which it is now published.

The first column on each page contains the number of the star, proceeding from the beginning to the end of the present Catalogue.

The next six columns contain the synonyms of the star in the principal *original* catalogues (Flamsteed's excepted), embracing this portion of the heavens. The second, or numbers of Hevelius, have been furnished by Mr. Sheepshanks, whose notes on the comparison will be found at the end. The name of the constellation to which the numbers of Hevelius refer, will be found in the eighth column, except (as sometimes happens) the star be referred by Hevelius and by Flamsteed to different constellations. In that case the name of the constellation of Hevelius is placed below the number. A few numbers of Hevelius, inclosed in brackets, were taken from Mr. Groombridge's catalogues, and were not included in Mr. Sheepshanks's comparison. In the third column, the numbers of Bradley refer to the Catalogue in Bessel's *Fundamenta &c.* In the fourth column it has been deemed unnecessary to repeat the hour of Piazz's Catalogue, as there never can be any difficulty in fixing upon the correct hour. The references are to the separate edition of his Catalogue, published at Palermo in 1814. In the fifth column, the Roman numerals denote the number of the zone, and the figures the number of the star in the zone, as given in Wollaston's *Fasciculus Astronomicus*. The sixth refers to Pond's Catalogue of 1112 stars ; and the seventh to the Catalogue of 560 Stars published by Argelander, at Helsingfors, in 1835. The eighth column contains Flamsteed's number and Bayer's character, as given in Mr. Baily's edition of the *British Catalogue*. If the star be one of those omitted by Flamsteed, but included in that Catalogue, its number in the Catalogue is given with the letters B. F. The rest of the Catalogue scarcely requires explanation, except that the precessions are merely geometrical precessions, computed by the formulæ,

$$\text{Precession in R.A.} = 3^{\text{s}}.068 + 1^{\text{s}}.336 \times \sin \text{R.A.} \times \cotan. \text{N.P.D.}$$

$$\text{Precession in N.P.D.} = -20''.045 \times \cos. \text{R.A.}$$

no consideration of proper motion being introduced.

These elements are the same as those adopted by Bessel in the *Fundamenta*.

To adapt the computed precessions to the elements of the *Tabulæ Regiomontanæ*, they ought to be multiplied by 1.0007.

In carrying forward the place of a star for any considerable number of years, it will be necessary to attend to the change of precession. This will be done conveniently in any case by the following formulæ. At the end of t years after 1810, the right ascension in time will be,

$$\alpha + p t + p' t^2$$

and the north polar distance in arc will be

$$\delta + q t + q' t^2$$

where α and p are the right ascension and precession in right ascension, and δ and q are the polar distance and precession in polar distance, as tabulated in the Catalogue; and where p' , in seconds of time, is computed by the formula,

$$-p q \cotan \delta \times [N^\circ \log = 4.38454] + q^2 \frac{\tan \alpha}{\sin \delta} \times [N^\circ \log = 3.20845]$$

and q' , in seconds of arc, by the formula,

$$-p q \tan \alpha \times [N^\circ \log = 5.56063]$$

In a few instances the magnitudes are omitted, where no authority could be found in the books already mentioned. In all these, it may be presumed, that the star is as small as the eighth magnitude.

In the instances of α *Aurigæ*, α *Lyræ*, and α *Cygni*, the number of observations of right ascension is omitted, even by Mr. Groombridge, for the following reason. It was no part of Mr. Groombridge's plan to correct the right ascensions of the fundamental stars which he used for correcting his clock; and these three are the only ones of Dr. Maskelyne's Catalogue, which occur in the circumpolar zone to which Mr. Groombridge's Catalogue is confined. The places of these stars, therefore, do not depend on his own observations, but are merely Maskelyne's places brought up by Mr. Groombridge to the same epoch as the rest of the Catalogue.

For many of the stars which have been most frequently observed, two values of the polar distance are set down, with two statements of the number of observations. These are the stars already mentioned as included in Catalogue A of the Book of Results, of which part of the observations have been originally reduced to 1807, and part to 1812. The values having been kept separate by Mr. Groombridge, I have thought it best to exhibit the corresponding values for 1810 in a distinct form, leaving it to the reader to incorporate them if he should think fit.

The nomenclature adopted by Mr. Groombridge was; to take in the order of preference Flamsteed's number, the number of Hevelius, Bode's number, and any of these with the letter p or f . The two first I have preserved, with such alterations as Mr. Baily's emendations of Flamsteed, and Mr. Sheepshanks's comparison with

Hevelius, have suggested ; but I have deemed it prudent to reject the latter entirely. Bode's Catalogue is one of no weight whatever for the accuracy of the places of stars, nor even as proving their existence in the heavens ; and its innovations in the introduction of new constellations are extremely objectionable. The numbers of Bode were, perhaps, adopted by Mr. Groombridge in the same manner as his own *p*'s and *f*'s, merely as serving for convenient reference till his observations should be completely reduced, then to be entirely discarded. In rejecting these numbers, I have thought it best also to reject the names of constellations entirely, except where (as in the names of Hevelius and Flamsteed) they form an essential part of the star's name. The confusion in the boundaries of different constellations, as laid down even by any one observer, is so great, and the reference to the numbers of a catalogue is so simple, that it is almost the duty of every one now publishing a catalogue of stars, to reject all use of the former, and to adopt only the latter.

For the following particulars relating to Mr. Groombridge's history, I am indebted to the communications of Mr. Robert Wiggell, many years the confidential agent of Mr. Groombridge.

Mr. Groombridge was born at Goudhurst, in Kent, on the 7th of January, 1755. At the usual age, he was apprenticed to Mr. Jere Greenland, linen-draper, who carried on business at 52, West Smithfield, London. Soon after the termination of his apprenticeship (when probably he had attained the age of 21 or 22), Mr. Greenland retired from business, and Mr. Groombridge carried on business in the same house. At first, I believe, his occupation was confined to the trade of linen-draper, but he afterwards became a West India merchant, and continued business in that capacity till the year 1815. While engaged in business, Mr. Groombridge resided principally at Goudhurst, where he built a small observatory, having from a very early age taken great delight in astronomy. About the 26th of August, 1802, he commenced his residence at Blackheath. I can give no account of his astronomical employments before 1806 (when the observations which have been in my hands commence) ; but, after that time, without ceasing to attend punctually to his commercial engagements in London, he laboured most vigorously on his astronomical observations at Blackheath. He retired from business about the end of 1815 ; and the remainder of his life was devoted to astronomy, and to music, of which he was enthusiastically fond. He died on the 30th of March, 1832, in the 78th year of his age, and was buried at Goudhurst.

To this I may add, that it has never occurred to me to inquire respecting any person who seemed to have made so strong an impression on all who were acquainted with him, for his private virtues, his strong talents, his unwearied energy, and his readiness in business of every kind, whether private or public.

Mr. Groombridge was married, and, at his death, left a widow, who survived him about five months. His only child, a daughter, was married to the Rev. Newton Smart, of Farley Hospital, near Salisbury; she died before Mr. Groombridge, leaving one son, Newton Groombridge Smart.

The following notices, relating to Mr. Groombridge's astronomical habits, have been furnished by different persons; for the most part, in answer to special inquiries addressed to them by me.

By Mr. ROBERT WIGZELL.

"The whole of the observations of the late Mr. Groombridge, I can positively state, were made by himself. Some of them were written in books, and others upon various scraps of paper, which, I believe, were destroyed after he was taken ill."

By Colonel THOMAS COLBY, of the Royal Engineers, Director of the Trigonometrical Survey of Great Britain and Ireland.

"I never was in his (Mr. Groombridge's) observatory except once, and that once only for a few minutes. He was then observing, and I remember perfectly his making some multiplications of numbers, consisting of three or four places of figures, in a peculiar manner; setting down only the product, without the intervention of the intermediate lines to shew the product by each digit separately. From these calculations, he obtained the mean result to set down for the reading of the microscopes corrected for some instrumental errors. I also remember remonstrating with him on the advantage of setting down the readings of the microscopes in their simple form, as a security against error. And I also then recalculated some of the means he had taken, using the ordinary mode for multiplying, and in these cases I found him perfectly correct. His argument for taking means and setting down results at once, was that, if they were deferred, there was great probability of the observations being allowed to remain unreduced. He was so extremely anxious to make all his observations and reductions as accurate as he was able, that I should place great reliance on a catalogue compiled from them, under the direction of an astronomer whose skill would leave no doubt as to the subsequent application of the astronomical corrections. The last time I saw Mr. Groombridge, he was labouring at the computation of the astronomical corrections requisite to prepare his observations for publication. Confined to his bedroom, and knowing that he had but a short time to live, he was still anxious that mankind should have the benefit of his zealous and disinterested devotion to the cause of astronomy."

By Dr. FIRMINGER, formerly Assistant at the Royal Observatory, Greenwich.

“ I saw very little of Mr. Groombridge after I left the Royal Observatory on the 1st of July, 1807. All my information, therefore, of his astronomical labours has reference to a period prior to that time; for, although often solicited by Mr. Groombridge afterwards to assist him, my avocations would not allow of my so doing. From the time that Mr. Groombridge erected his four-feet circle, up to the time above-mentioned of my leaving the Royal Observatory, he always made all his registered observations himself. I have no recollection of any other person, nor do I believe that any one but himself entered a single observation. His uniform practice was, to write down his observations, after reading off the microscopes, upon a slate; and he usually kept two or three slates by him for that purpose, carefully examining his observations and registering them at his leisure. His observatory being close to his parlour, he frequently left his dinner, stepped into it, made his observation, noted it down on his slate, and then returned to his family and friends. He had a most accurate eye, both in observing and in reading off his observation, and was one of the most accurate and expeditious men I ever saw in the manipulation of his instrument. I do not recollect him ever to have made a mistake, or to have entertained a doubt on the accuracy of his observation, so far as reading off or time was concerned. He had not reduced many of his observations at that time. His object was to first complete his series, and afterwards reduce them at his leisure. And, according to a paper published in the Philosophical Transactions, 1810, he had computed himself a very great number of them; and I have no doubt but that the observations which he computed himself were computed with great care; for, although no mathematician, he was an excellent arithmetician, very expeditious and correct in his computations, and understood well the application of the necessary equations to the reduction of his observations. With respect to the microscopes, I do not recollect any thing particular in their construction; but I am certain that Mr. Groombridge never asked me any question on the method of applying their readings, which he would have done, had any difficulty arisen in the management of them. I have, therefore, no doubt but that he understood the management of them well; and that had they read off complements, he would have either reduced them at the time to their just quantities, or have noticed the contrary in the books wherein he has registered his observations. I do not recollect whether the micrometer heads had a single or a double line of divisions. The meridian mark, by which Mr. Groombridge used to adjust his instrument, was on the south wall of Greenwich Park; it was too near, and not well adapted for the purpose. He had not one to the south of his observatory. Mr. Groombridge was a man of no ordinary talents; and, although he had not in his early days acquired any knowledge of the mathe-

matics, he nevertheless had a very ready and clear conception of all that is necessary in a good practical astronomer, and was most indefatigable in the pursuit of his favourite science."

The following is a brief account of Mr. Groombridge's published papers relating to Astronomy.

- I. Philosophical Transactions, 1810. Observations on Atmospheric Refraction as it affects Astronomical Observations; in a letter from S. GROOMBRIDGE, Esq. to the Rev. NEVIL MASKELYNE, D.D. F.R.S., Astronomer Royal. Communicated by the Astronomer Royal. Read March 28th, 1810.

Mr. Groombridge, after mentioning the fitness of his instrument for the observation of zenith distance, and the care taken to exclude the sun's influence, &c. states that he has selected fifty stars, on which his observations exceed in number 1000. (I have already mentioned that the paper containing the apparent zenith distance to be used, when reduced to mean zenith distance, for this investigation, has come into my hands with the papers relating to the catalogue; that the observations are all contained in the Zenith Distance Book, and that all are reduced by index error deduced from the first stage of the standard catalogue.) He then mentions that, Dr. Bradley's refraction having been deduced from observations of the sun with circumpolar stars, on the supposition that the sun's mean parallax was $10\frac{1}{3}''$; the alteration of that coefficient to $8\frac{3}{4}''$ would require the coefficient of refraction to be diminished from $57''$ to $56\frac{1}{2}''$; and, with this coefficient (adopting Bradley's formula in other respects), all his refractions for these observations have been computed. He then gives a large table containing the star's name; the number of observations above and below the pole; the mean zenith distance above and below, for Jan. 1, 1807; the mean computed refraction; the corrected mean zenith distance above and below, (I have mentioned above, that this mean zenith distance above is the same as the second stage of the standard catalogue); and the sum or difference of the corrected mean zenith distances above and below, which gives the double of the colatitude, and ought therefore, if the refractions were correct, to give an invariable quantity. Instead of this, it appears that the quantity diminishes as the polar distance of the stars increases, and (as far as η Ursæ Majoris) in a pretty uniform manner. He then compares the mean of the first thirteen stars with the mean of the next twenty-one (of which η Ursæ Majoris is the last); and, having prepared a column containing the sum of the refractions for each star, he equates the mean result for the thirteen, altered by the product of the mean sum of the refractions into an unknown quantity, with the mean result for the twenty-one similarly altered; and thus obtains the value of the unknown quantity = 0.02845; whence the

refraction, for the mean of the barometrical and thermometrical readings occurring in these observations, is $1.02845 \times 56''.5 \times \tan(z - 3r)$: and the colatitude = $38^\circ 31' 57''.90$. (I may remark, that the numbers of the third stage of the fundamental catalogue cannot be produced by only thus correcting the refractions.)

Mr. Groombridge then gives the result of eighteen observations of the summer solstice, and thirteen of the winter solstice; which, reduced by the altered refraction, give very nearly the same latitude for his observatory as that above deduced. The particulars of the observations are not given. He also investigates his difference of latitude from the Royal Observatory, by comparing the results above with the zenith distances of some of the same stars, obtained by Colonel Mudge, at the Royal Observatory, in 1802, with Ramsden's zenith sector.

He then proceeds to correct the factor of r in the formula, by comparing the refraction of Polaris with that of each of the three lowest stars of his list (γ Aurigæ, ζ Aurigæ, β Persei); inferring their refractions below the pole (I suppose) from the observed zenith distance with the colatitude above given, and the zenith distance above the pole found by the first correction of refraction. Adopting for the determination of the factor y the formula

$$y = \frac{r \cot z - r' \cot z'}{r'^2 - r^2}$$

where z and z' , r and r' , are the zenith distances of the two stars compared and their refractions, he finds by the mean of the three, $y = 3.3625$; and, altering the coefficient to make the refraction at 45° zenith distance the same as before, he obtains for refraction,

$$r = 58''.12 \times \tan(z - 3.3625 \times r).$$

He then states, that the thermometrical correction has been investigated by comparing winter observations with summer observations, for several of the low stars in the preceding table, on the north side, and for Fomalhaut, on the south side; and finds, as a thermometrical factor, $1 + \overline{45 - h^\circ} \times 0.0021$ for the exterior thermometer, and $1 + \overline{49 - h^\circ} \times \begin{Bmatrix} 0.0023 \\ 0.0024 \end{Bmatrix}$ for the interior thermometer, h being the reading in degrees of Fahrenheit, and the upper or lower number being taken, according as the interior thermometer is above or below 49° .

II. Philosophical Transactions 1814. Some Further Observations on Atmospheric Refraction. By STEPHEN GROOMBRIDGE, Esq. F.R.S. Read, March 31, 1814.

Mr. Groombridge mentions, that having applied his corrected formula to stars whose zenith distance exceeded $78^\circ 10'$ (the zenith distance of γ Ursæ Majoris, the lowest star used in the preceding investigations), he found that the places of stars so corrected were too low, and, therefore, that his refraction was too great. In

1811 and 1812, therefore, he made a number of observations on lower stars. From sixteen stars between $81^{\circ} 39'$ and $86^{\circ} 58'$ zenith distance, he obtained the formula $58'' \cdot 133 \times \tan (z - 3^{\circ} 634 r)$; and found, also, that the thermometrical factor should be changed from $1 + 45 - h^{\circ} \times 0.0021$ to $1 + 45 - h^{\circ} \times 0.0020$. For six lower stars, whose zenith distances extend from $87^{\circ} 8'$ to $88^{\circ} 42'$, he found that the refraction would be represented by using the same coefficient, and increasing the multiplier of r by 0.00462 for each minute above 87° . He then gives the reduction of the observations near the solstices of December 1810, December 1811, June 1812, and December 1812; and concludes with an extensive table of refractions founded on the above-mentioned formula.

III. Philosophical Transactions, 1820. Astronomical Observations, by STEPHEN GROOMBRIDGE, Esq. F.R.S. Read June 29, 1820.

These comprise, 1st. Observations of the Solstices in the years 1818 and 1819. There are first given the observed zenith distances of the sun in June 1818, December 1818, June 1819, and December 1819; then the corrections for refraction by Mr. Groombridge's tables; then the equation to the solstitial zenith distance (the grounds of computation of which are not given); then reductions for nutation, parallax, and sun's latitude: from these the obliquity is obtained. (The corrected zenith distances used here are the same which are to be found in the Zenith Distance Book.)

2d. Oppositions of the New Planets. There are given the day, the mean time, the right ascension (in arc), the declination, the longitude, and the latitude, of Vesta, in April 1818, Pallas, in September 1818 and February 1820, and Ceres, in February 1820. No particulars of the observations or reductions are given, except the amount of parallax. (The observations are to be found in the Transit and Zenith Distance Books.)

IV. Astronomical Society's Memoirs, Vol. I. Universal Tables for the Reduction of the Fixed Stars. By S. GROOMBRIDGE, Esq. F.R.S. and S.R.A. Nap. Read November 10, 1820.

These tables are founded upon the following elements: luni-solar precession = $50'' \cdot 255$; coefficient of aberration = $20'' \cdot 255$; coefficient of lunar nutation = $9'' \cdot 63$; coefficient of solar nutation = $0'' \cdot 4345$. For the precession in R.A. ($m + n \cdot \sin$ R.A. $\cdot \tan$ declin.), a table is given containing $n \cdot \sin$ R.A.; the rest must be completed by numerical multiplication, and must then be combined with a factor depending on the day of the year; for the equation of the equinoxes, a separate table; for the remaining parts of nutation, two tables are arranged as to express $8.40 \times \sin$ of an arc, and $1.23 \times \sin$ of an arc: the arcs depending on the star's R.A. and the place of the moon's node; and the results for R.A. requiring to be

multiplied by $\frac{1}{15}$ tan declination. For aberration, the form used is $A \times \sin$ (sun's longitude $- B$); tables (of double entry where necessary) being arranged for giving A and B . The tables occupy twenty-nine quarto pages.

- V. *Astronomical Society's Memoirs, Vol. I.* Observations of the Planets, during the Period of their respective Oppositions, in 1820, 1821, and 1822; with the Computation of their Geocentric Longitudes and Latitudes, by Means of the assumed Parallax therein mentioned, and of his own Tables of Refraction. By STEPHEN GROOMBRIDGE, Esq. F.R.S. Read April 12, 1822.

The results are stated exactly as in a paper already mentioned. The observations are contained in the Books of Transits and Zenith Distances. The observations are, of Venus, in May 1822; of Mars and neighbouring stars, in February 1822; of Vesta, in January and February 1821 and June 1822; of Juno, in January and February 1823 (these are the last observations in his books); of Pallas, in February 1820 and May 1821; of Ceres, in February 1820 and May 1821; of Jupiter, in September 1820 and October 1821; of Saturn, in October 1820 and October 1821; and of Uranus, in June 1821 and June 1822.

- VI. *Astronomical Society's Memoirs, Vol. II.* On the Colatitude of the Observatory of Stephen Groombridge, Esq. at Blackheath; determined by his own Observations of Circumpolar Stars, reduced by the Constant of Refraction $58''.133$ at 45° . Read January 13, 1826.

This paper contains the results deduced from thirty-two stars, whose zenith distance does not exceed 80° : the results of six lower stars are also set down, but are not included in the formation of the mean. The observations have all been corrected by his last improved tables of refraction. The result is $38^\circ 31' 57''.82$ (the same which is used in forming the Catalogue). The zenith distances used do not agree with those of the Standard Catalogue in any stage; but they are, as far as they go, the quantities which have been used in forming the N.P.D. of Catalogue A.

* * It was the wish of Mr. Groombridge, that his manuscript observations, &c. might be deposited with the Royal Astronomical Society; and Mr. Groombridge's representatives and Mrs. Groombridge's executor, have intimated to me their desire that this wish may be complied with. The President and Council of the Royal Astronomical Society having undertaken the custody of the manuscripts, and the Lords Commissioners of the Admiralty having authorised me to transfer them to that body, I intend, at a very early opportunity, to place the whole of the books and papers in their hands.

UNIVERSITY OF
CALIFORNIA

GROOMBRIDGE'S

CATALOGUE

OF

CIRCUMPOLAR STARS,

REDUCED TO JANUARY 1, 1810.

GROOMBRIDGE'S CATALOGUE OF CIRCUMPOLAR STARS.

No.	Hevelius.	Bessel's Bradley.	Piazzi.	Wollaston.	Pond.	Argelander.	Flamsteed's No. and Bayer's Character.	Magnitude.	Right Ascension. Jan. 1, 1810.	Annual Precession.	No. of Obs.	North Polar Distance. Jan. 1, 1810.	Annual Precession.	No. of Obs.
1	6	0 ^h 0 ^m 13 ^s ·47	+3 ^s ·069	4	44° 40' 0"·9	-20"·045	4
2	7	0 24·94	3·071	5	38 48 10·6	20·044	5
3	..	3219	288	..	2	..	22 Andromedæ	5	0 29·16	3·071	5	44 59 9·1	20·044	6
4	7	0 42·41	3·073	5	38 44 25·1	20·044	4
5	8·9	1 6·14	3·082	3	24 58 38·5	20·044	3
6	7	1 11·63	3·091	5	16 34 20·9	20·044	5
7	7	1 50·09	3·092	5	24 55 54·1	20·044	5
8	7·8	1 59·92	3·082	3	39 34 42·5	20·044	3
9	7	2 5·48	3·081	5	42 54 21·2	20·044	5
10	7·8	2 9·87	3·095	2	25 3 24·7	20·044	2
11	8	2 15·62	3·082	4	42 52 28·7	20·044	4
12	8·9	2 34·11	3·083	2	45 5 52·9	20·044	2
13	6·7	2 40·52	3·083	5	46 20 55·4	20·043	5
14	7·8	2 41·76	3·083	4	46 27 57·8	20·043	4
15	7·8	2 43·09	3·083	5	46 44 29·4	20·043	5
16	7·8	2 53·74	3·085	5	44 57 42·2	20·043	5
17	7	2 57·13	3·089	4	39 34 22·5	20·043	4
18	8	3 7·45	3·089	3	41 7 52·4	20·043	3
19	8	3 25·23	3·091	3	41 20 0·7	20·043	3
20	..	2	12	..	..	..	23 Andromedæ	6	3 40·62	3·086	6	50 0 50·4	20·042	6
21	7·8	4 8·02	3·120	3	24 42 53·2	20·042	3
22	7·8	4 13·38	3·121	4	24 51 7·3	20·042	4
23	?	4 37·07	3·122	3	26 29 26·7	20·041	3
24	13	..	..	..	.....	7	4 39·82	3·091	3	50 1 32·1	20·041	3
25	7	4 43·96	3·102	3	39 26 23·8	20·041	3
26	7·8	4 53·29	3·129	3	24 56 31·2	20·040	3
27	7·8	5 23·32	3·099	5	46 51 13·4	20·039	5
28	7·8	5 36·24	3·105	4	41 0 23·6	20·039	4
29	..	6	..	..	..	..	.....	6	5 39·59	3·199	5	14 6 23·2	20·039	5
30	8	6 25·09	3·102	8	47 27 37·1	20·037	8
31	25	..	..	..	.....	5·6	6 49·27	3·138	6	29 31 24·4	20·036	6
32	7	6 54·32	3·109	5	44 26 28·7	20·035	5
33	6	7 10·22	3·113	6	43 6 30·9	20·034	6
34	8·9	7 36·37	3·109	4	47 3 16·0	20·033	4
35	6	0 7 41·78	+3·122	6	39 37 24·7	-20·033	6

No.	Hevelius.	Bessel's Bradley.	Piazz.	Wollaston.	Pond.	Argelander.	Flamsteed's No. and Bayer's Character.	Magnitude.	Right Ascension. Jan. 1, 1810.	Annual Precession.	No. of Obs.	North Polar Distance. Jan. 1, 1810.	Annual Precession.	No. of Obs.
36	7	^h 0 ^m 7 ^s 45.47	+3.239	6	14° 46' 48".5	-20".033	6
37	7	7 45.87	3.206	5	18 6 33.9	20.032	5
38	8	8 3.62	3.109	3	50 18 31.1	20.032	3
39	7	8 7.00	3.152	2	29 19 46.0	20.030	2
40	..	13	37	..	..	..	26 Andromedæ	6	8 43.41	3.115	6	47 15 52.6	20.030	6
41	7	8 45.68	3.226	5	17 55 59.0	20.027	5
42	8.9	9 32.27	3.119	3	47 22 37.5	20.026	3
43	7	9 44.45	3.115	6	50 19 33.1	20.025	6
44	6.7	10 2.50	3.133	5	42 11 22.4	20.025	5
45	8	10 7.92	3.123	4	47 7 44.9	20.025	4
46	6.7	10 27.57	3.135	5	42 5 12.2	20.023	5
47	8	10 27.57	3.127	2	46 6 58.0	20.023	2
48	6	10 27.80	3.177	6	29 10 34.0	20.023	6
49	8.9	10 30.56	3.119	3	50 7 56.5	20.023	3
50	8	10 32.36	3.126	5	47 21 35.0	20.023	5
51	8	11 0.49	3.127	3	47 20 25.3	20.021	3
52	7	11 9.18	3.131	5	46 7 4.9	20.020	5
53	7	11 20.46	3.185	4	29 21 42.3	20.020	4
54	8	11 35.57	3.258	3	19 32 52.3	20.019	3
55	7	12 36.91	3.168	6	36 24 33.7	20.014	6
56	7.8	13 38.22	3.145	4	45 57 58.4	20.009	4
57	5.6	14 1.33	3.145	10	46 47 20.7	20.007	10
58	5.6	14 4.68	3.169	5	39 2 3.7	20.007	5
59	8	14 7.62	3.151	4	45 10 54.0	20.006	4
60	..	21	58	..	..	..	12 Cassiopeiæ	5.6	14 23.35	3.218	6	29 13 23.9	20.005	6
61	..	23	..	..	..	..	.....	6	14 53.11	3.183	6	38 0 26.4	20.002	6
62	7	15 0.34	3.318	5	19 14 50.0	20.001	5
63	8	15 19.27	3.152	2	46 43 47.0	19.999	2
64	6.7	16 59.65	3.182	5	41 4 2.7	19.989	5
65	17	..	74	..	..	..	Andromedæ	5.6	18 3.46	3.167	6	46 39 26.5	19.983	6
66	7	18 43.75	3.186	6	42 38 19.2	19.978	6
67	7	19 0.19	4.406	6	4 43 54.1	19.976	6
68	6.7	19 1.16	3.268	6	28 59 15.4	19.976	6
69	6.7	20 4.94	3.282	5	28 41 50.5	19.967	5
70	9	0 20 8.83	+3.175	2	47 39 28.5	-19.967	2

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71	..	37	90	v. 1	13 Cassiopeiæ	6	^h 0 ^m 20 ^s 35.83	+3.331	6	24° 31' 53".2	-19.963	6
72	6.7	20 44.46	3.208	6	40 47 52.6	19.962	6
73	8.9	20 52.39	3.179	3	47 40 19.6	19.961	3
74	93	..	..	..	.....	7	21 1.49	3.181	6	47 6 15.1	19.960	6
75	7	21 20.62	3.226	5	38 12 38.1	19.957	5
76	4	40	95	..	7	..	14 Cassiop. λ	5	21 20.84	3.236	3	36 31 40.7	19.957	7
77	8	21 21.03	3.232	3	37 5 20.0	19.957	3
78	7	21 33.01	3.193	5	45 7 22.9	19.956	5
79	8.9	21 44.66	3.230	3	38 2 55.0	19.954	3
80	7.8	21 48.05	3.235	4	37 14 7.2	19.954	4
81	..	42	..	..	..	..	.....	7	22 7.76	3.421	7	20 4 7.5	19.951	7
82	8	22 12.85	3.188	2	47 12 50.1	19.950	2
83	8.9	22 13.52	3.223	3	39 56 48.0	19.950	3
84	7.8	22 14.52	3.186	5	47 33 18.6	19.950	5
85	5	43	99	..	8	8	15 Cassiop. ζ	4	22 17.30	3.311	6	28 7 7.1	19.950	7
86	7.8	22 20.58	3.241	4	36 55 41.0	19.949	4
87	8.9	22 31.99	3.187	2	47 49 45.3	19.948	2
88	104	..	..	..	.....	7	22 55.98	3.295	6	30 30 4.5	19.945	6
89	..	46	105	..	..	..	16 Cassiopeiæ	6	23 27.50	3.370	6	24 17 57.2	19.940	6
90	8	23 35.20	3.194	3	47 22 54.1	19.939	3
91	8	23 45.69	3.252	1	36 58 56.4	19.937	1
92	8.9	23 47.28	3.232	3	40 3 10.4	19.937	3
93	7	24 3.25	3.217	4	43 8 13.4	19.935	4
94	6?	..	112	..	..	..	Cassiopeiæ	8	24 37.55	3.325	4	29 11 4.1	19.930	4
95	8	24 56.45	3.312	2	30 45 9.8	19.927	2
96	7.8	24 58.64	3.262	3	36 50 43.3	19.926	3
97	8.9	25 22.94	3.463	2	20 28 31.4	19.922	2
98	..	49	118	..	..	..	.....	6	25 37.64	3.267	6	36 52 46.7	19.920	6
99	6	25 44.40	3.320	7	30 43 18.8	19.919	7
100	..	48	..	..	..	11	.....	6	25 55.81	4.072	5	8 33 30.1	19.916	6
101	7.8	26 2.46	3.212	4	46 24 33.1	19.916	4
102	9	52	123	..	9	..	17 Cassiop. ζ	4	26 26.72	3.271	4	37 9 0.4	19.912	6
103	18 Andr.	..	124	B. F. 42	5.6	26 29.38	3.214	7	46 33 39.7	19.911	7
104	6.7	26 44.27	3.329	1	30 44 13.8	19.909	1
105	8	0 26 51.02	+3.500	2	19 52 49.0	-19.908	2

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106	8	^h 0 ^m 27 ^s 7.77	+3.505	2	19° 51' 52".9	-19".905	2
107	7	27 32.37	3.236	4	43 38 6.3	19.900	4
108	7.8	27 46.39	3.340	3	30 43 19.6	19.897	3
109	7	27 55.35	3.263	5	39 46 39.9	19.896	5
110	7	28 14.44	3.266	4	39 39 20.9	19.893	4
111	6.7	28 19.51	3.238	5	44 5 24.9	19.892	5
112	8	28 38.06	3.227	4	46 23 0.7	19.888	4
113	6	28 43.00	3.256	5	41 41 29.1	19.887	4
114	8	28 55.51	3.521	4	20 20 13.9	19.885	4
115	8	29 7.10	3.259	2	41 28 22.2	19.883	2
116	7.8	29 21.71	3.354	3	30 50 43.4	19.881	3
117	10	59	139	..	13	15	18 Cassiop. α	3	29 47.47	3.320	5	34 30 22.9 23.7	19.875	18 34
118	7.8	30 22.11	3.443	4	25 10 24.6	19.868	4
119	7	30 39.35	3.289	5	38 50 46.0	19.866	5
120	6	30 50.94	3.454	5	24 53 47.3	19.864	5
121	22	61	143	..	..	..	32 Androm.	6	30 51.47	3.210	6	51 35 9.7	19.864	6
122	7.8	30 58.13	3.571	3	19 40 41.3	19.863	3
123	13	62	147	..	..	..	19 Cassiop. ξ	6	31 31.33	3.282	6	40 31 54.5	19.856	6
124	..	64	..	..	..	..	.....	8	31 43.62	3.221	3	50 21 11.3	19.853	3
125	7	32 1.85	3.300	5	38 42 22.9	19.850	5
126	7	32 17.62	3.763	5	15 6 2.0	19.846	5
127	?	32 21.52	3.578	5	20 13 8.3	19.845	5
128	14	67	154	..	14	..	20 Cassiop. π	5.6	33 0.13	3.266	6	44 1 1.5	19.837	6
129	..	66	156	iii. 1	..	..	21 Cassiopeie	6	33 19.00	3.741	6	16 3 11.9	19.833	6
130	7	33 33.83	3.269	2	44 4 42.6	19.830	2
131	9	33 56.56	3.231	2	50 21 24.1	19.825	2
132	15	69	160	..	..	..	22 Cassiop. ο	5.6	34 11.39	3.283	6	42 45 26.9	19.822	6
133	7	34 16.61	3.233	6	50 21 45.9	19.820	6
134	162	..	..	..	.....	6	34 31.67	3.346	6	35 49 13.3	19.817	6
135	8	35 2.73	3.348	1	36 3 35.3	19.810	1
136	42 Cephei	72	165	iii. 2	..	..	23 Cassiopeie	5.6	35 17.79	3.774	6	16 11 35.1	19.807	6
137	168	..	..	..	.....	7	35 26.92	3.354	5	35 44 6.7	19.805	5
138	7	35 39.84	3.240	6	50 13 45.6	19.803	6
139	8	35 41.00	3.354	1	35 53 41.9	19.802	1
140	7	0 35 42.42	+3.267	5	46 10 44.9	-19.802	5

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141	7	^h 0 ^m 36 ^s 5.18	+3.284	6	44° 8' 51".0	-19".797	6
142	181	6.7	37 17.33	3.330	6	39 35 43.3	19.780	6
143	7	37 30.46	4.005	6	13 5 5.1	19.777	6
144	177	i. 1	..	..	B. F. 46	6	37 34.75	9.302	5	2 0 12.4	19.776	7
145	8	37 37.15	3.649	3	20 36 1.9	19.775	3
146	17	79	185	..	18	19	24 Cassiop. η	4	37 40.35	3.402	6	33 11 44.3 } 46.7 }	19.775	18 } 22 }
147	7.8	37 54.52	3.677	4	19 51 46.7	19.771	4
148	7	38 2.34	3.666	5	20 15 51.8	19.769	5
149	8	38 3.01	3.281	4	46 3 56.9	19.769	4
150	11	83	187	..	..	..	25 Cassiop. ν	5	38 7.29	3.331	6	40 4 13.9	19.768	6
151	6	39 1.38	3.308	6	43 16 23.0	19.755	6
152	26	87	194	..	20	..	35 Androm. ν	4	39 22.61	3.260	3	49 57 29.5	19.749	5
153	196	..	..	..	.....	6.7	39 44.53	3.290	6	46 2 8.5	19.744	6
154	199	..	..	..	.....	6	40 8.78	3.350	6	39 31 46.6	19.738	6
155	203	..	..	..	.....	6	40 47.07	3.355	6	39 27 53.4	19.728	6
156	8	41 16.79	3.413	5	34 46 15.9	19.720	5
157	8	41 47.95	3.308	4	45 13 49.0	19.712	4
158	18	90	209	..	..	..	Cassiopeiæ	5.6	41 49.27	3.489	12	29 55 14.0	19.712	12
159	8	42 2.62	3.304	3	45 54 2.1	19.708	3
160	8	42 14.94	3.344	2	41 35 30.4	19.705	2
161	7	42 21.32	3.604	4	24 35 57.8	19.703	4
162	7.8	42 25.98	3.269	5	50 47 32.6	19.702	5
163	7	42 34.27	3.348	5	41 22 44.0	19.700	5
164	7	42 50.26	3.339	1	42 30 52.7	19.695	1
165	211	..	..	..	.....	7	42 53.78	3.382	7	38 20 39.6	19.694	7
166	8	42 59.83	3.321	4	45 12 56.8	19.676	4
167	7.8	43 25.32	3.431	5	34 42 47.7	19.685	5
168	..	94	217	..	..	..	26 Cassiop. ν^1	5.6	43 48.36	3.473	6	32 3 30.1	19.679	6
169	8	44 7.22	3.356	2	41 37 41.9	19.674	2
170	8.9	44 7.28	3.375	2	39 49 47.8	19.674	2
171	5	44 20.59	3.350	6	42 21 14.3	19.670	6
172	8.9	44 21.44	3.752	2	20 34 46.7	19.670	2
173	7.8	44 26.90	3.630	4	24 37 12.5	19.668	4
174	8	44 28.20	3.333	3	44 8 57.2	19.668	3
175	8	0 44 38.40	+8.448	4	2 45 23.8	-19.665	4

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176	8	^h 0 ^m 44 ^s 48.08	+3.319	10	45° 56' 22".9	-19.663	10
177	43 Cephei	..	220	i. 2	23	..	2 Ursæ Minor.	5	44 49.23	6.181	6	4 46 7.5	19.662	7
178	8	44 56.62	3.278	3	50 38 58.3	19.659	3
179	8	45 8.53	3.338	3	44 9 23.1	19.656	3
180	8	45 16.47	3.327	4	45 20 57.7	19.655	4
181	19	99	225	..	22	..	27 Cassiop. γ	3	45 19.86	3.517	6	30 18 54.1	19.653	10
182	8.9	45 25.75	3.506	3	30 59 53.2		19
183	20	..	226	..	..	..	28 Cassiop. ν^2	5.6	45 25.88	3.492	6	31 50 54.2	19.652	6
184	6	45 25.94	3.512	7	30 40 8.0	19.652	7
185	8	45 31.27	3.338	3	44 22 37.7	19.650	3
186	7	45 51.49	3.777	5	20 32 5.6	19.645	5
187	8.9	45 55.57	3.516	3	30 41 32.7	19.643	3
188	7	45 55.67	3.307	5	48 3 9.1	19.643	5
189	9	46 19.03	3.518	2	30 47 35.3	19.636	2
190	8	46 21.45	3.332	4	45 25 14.6	19.636	4
191	233	..	..	..	.....	7	46 24.03	3.402	5	38 47 29.9	19.635	5
192	6	46 36.93	3.655	6	24 40 41.3	19.632	6
193	7	46 57.97	3.338	5	45 11 28.3	19.626	5
194	7	46 58.51	3.405	5	38 53 35.9	19.626	5
195	234	i. 3	..	..	.....	6	47 9.68	7.102	3	3 52 27.3	19.622	6
196	7.8	47 34.95	3.339	5	45 25 53.4	19.615	5
197	6.7	47 56.42	3.829	6	20 2 44.8	19.608	6
198	7.8	47 57.42	3.355	5	43 59 33.7	19.608	5
199	8	48 0.47	3.336	8	46 4 23.0	19.607	8
200	7.8	48 29.67	3.404	1	39 55 6.7	19.598	1
201	8	48 35.12	3.545	4	30 31 4.1	19.596	4
202	7.8	48 52.72	3.298	5	50 52 22.0	19.590	5
203	8	49 6.12	3.828	4	20 30 22.2	19.586	4
204	248	..	..	..	.....	7	49 12.90	3.512	6	32 39 46.7	19.584	6
205	7	49 21.22	3.341	6	46 18 49.0	19.581	6
206	8.9	49 37.12	3.552	3	30 40 4.3	19.576	3
207	8	49 58.33	3.411	1	40 8 53.1	19.569	1
208	8.9	50 3.79	3.367	2	44 6 5.7	19.568	2
209	8.9	50 8.48	3.864	3	20 0 46.4	19.566	3
210	9	0 50 9.76	+4.027	2	16 50 10.2	-19.566	2

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211	254	6·7	^h 0 ^m 50 ^s 32·15	+3·354	10	45° 34' 24"·3	-19"·559	10
212	8	50 34·03	3·841	4	20 42 16·8	19·558	4
213	8·9	50 53·30	3·380	3	43 19 6·3	19·552	3
214	7	51 18·97	3·562	5	30 59 24·0	19·554	5
215	6	51 24·89	4·061	7	16 39 8·8	19·542	7
216	8	51 25·68	3·599	3	29 15 2·7	19·542	3
217	8·9	51 55·21	3·386	3	43 19 34·6	19·532	3
218	8·9	51 59·64	3·362	2	45 36 2·9	19·531	2
219	6	52 0·56	3·590	6	29 56 59·8	19·531	6
220	7·8	52 8·49	3·384	2	43 38 51·8	19·528	2
221	6·7	52 9·13	3·548	6	32 6 53·0	19·528	6
222	30	108	259	..	..	..	39 Androm.	6	52 16·00	3·324	6	49 40 44·9	19·526	6
223	8·9	52 17·14	3·390	3	43 10 12·3	19·525	3
224	8	52 23·03	3·609	3	29 12 47·5	19·523	3
225	7	52 41·54	3·608	5	29 26 31·8	19·518	5
226	8	52 56·18	3·877	3	20 42 16·0	19·513	3
227	8	52 59·95	3·539	4	33 2 30·9	19·511	4
228	7·8	53 0·73	3·392	5	43 22 53·3	19·511	5
229	8·9	53 8·57	3·541	3	32 59 3·8	19·508	3
230	..	109	..	..	..	..	.....	7	53 28·88	4·656	6	11 0 25·9	19·501	6
231	267	..	..	..	.....	7	53 43·82	3·438	5	40 0 46·2	19·497	5
232	6	53 57·69	3·321	5	51 1 52·0	19·492	5
233	268	..	..	..	.....	7	54 2·19	3·922	5	20 5 23·6	19·490	5
234	6	54 30·26	3·654	6	28 15 31·6	19·480	6
235	12	102	263	i. 4	28	..	1 Ursæ Min. α	2	54 37·56	13·688	93	1 42 20·6	19·478	93
236	7	54 42·43	3·654	4	28 21 0·8	19·476	4
237	21	118	277	..	..	23	30 Cassiop. μ	5	55 41·92	3·511	5	36 0 55·5	19·455	7
238	7	55 48·26	3·937	5	20 20 15·6	19·453	5
239	279	..	..	..	.....	7	55 55·95	3·488	5	37 31 18·1	19·450	5
240	7·8	56 0·15	3·667	4	28 21 59·7	19·449	4
241	285	..	..	..	.....	7	56 11·57	3·435	5	41 27 51·2	19·445	5
242	44	117	283	ii. 4	..	..	Cephei	6	56 19·25	4·690	12	11 20 34·0	19·442	12
243	6·7	56 44·64	3·346	7	49 45 28·3	19·433	7
244	6·7	57 0·59	3·579	7	32 45 17·4	19·428	7
245	6·7	0 57 3·94	+3·349	7	49 30 19·2	-19·427	7

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246	31	129	290	24	41 Andromedæ	5	^h 0 ^m 57 ^s 9.35	+3.375	7	47° 4' 25.7"	-19.425	7
247	8.9	57 40.47	3.589	3	32 36 10.5	19.413	3
248	22	130	293	iv. 1	..	..	31 Cassiopeiæ	5.6	57 57.34	3.886	6	22 14 11.7	19.407	6
249	8	58 22.36	3.477	2	39 26 24.3	19.398	2
250	8	58 23.42	3.525	3	36 23 15.4	19.398	3
251	7	58 30.35	3.528	5	36 16 47.9	19.395	5
252	32	134	298	..	30	..	42 Androm. φ	5	58 31.66	3.420	5	43 46 28.6	19.394	5
253	7	58 48.33	3.445	3	41 57 46.3	19.388	3
254	7.8	58 57.11	3.484	4	39 16 9.1	19.385	4
255	..	139	305	..	..	..	32 Cassiopeiæ	6	59 26.24	3.771	6	25 59 43.9	19.374	6
256	34	143	306	..	..	..	44 Andromedæ	5.6	59 34.05	3.367	6	48 55 56.7	19.371	6
257	23	142	307	..	33	29	33 Cassiop. φ	4	59 36.32	3.551	5	35 51 50.4 } 50.7 }	19.371	29 } 44 }
258	7.8	59 36.80	3.724	4	27 39 8.3	19.370	4
259	7.8	59 37.30	4.187	3	17 5 36.1	19.370	3
260	7	0 59 47.16	3.453	3	41 51 5.3	19.366	3
261	..	137	309	ii. 5	..	..	.....	7	1 0 12.58	4.835	6	11 6 18.7	19.356	6
262	7.8	0 16.07	3.423	6	44 23 5.0	19.355	6
263	8	1 5.03	3.495	2	39 29 18.5	19.337	2
264	9	..	..	..	.....	6	1 36.78	3.415	6	45 40 36.5	19.325	6
265	7.8	1 38.08	3.500	4	39 24 25.0	19.325	4
266	8	2 29.09	4.245	3	16 59 55.5	19.304	3
267	7	2 35.23	4.248	5	16 58 59.9	19.302	5
268	8	2 37.27	3.437	4	44 21 9.1	19.301	4
269	8.9	2 37.33	4.090	3	19 26 8.7	19.301	3
270	8	2 40.65	3.466	4	42 13 26.1	19.300	4
271	..	151	12	..	..	..	.....	6.7	2 44.86	4.102	6	19 15 58.9	19.298	6
272	8.9	3 47.94	3.472	2	42 15 33.8	19.273	2
273	8	3 57.49	3.444	4	44 22 45.9	19.269	4
274	8	4 8.75	3.519	2	39 16 3.2	19.265	2
275	8	4 12.78	3.405	4	47 37 17.5	19.263	4
276	..	155	..	ii. 6	..	..	.....	7	4 52.40	4.630	5	13 26 21.9	19.247	5
277	26	..	..	..	.....	6.7	5 15.71	3.472	6	42 55 32.9	19.237	6
278	7.8	5 22.95	5.027	4	10 52 28.3	19.234	4
279	6	5 36.28	3.407	5	48 3 59.4	19.229	5
280	24	Cassiopeiæ	7	1 6 4.54	+3.799	4	27 27 4.30	-19.216	4

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281	7	^h 1 ^m 6 ^s 4.69	+3.433	5	46° 6' 10".7	-19".217	5
282	7.8	6 41.68	3.434	5	46 22 25.4	19.201	5
283	..	163	7	6 52.77	4.527	5	14 45 46.1	19.197	5
284	31	..	..	..	.....	7	7 1.52	3.473	7	43 35 8.2	19.193	7
285	7	7 4.38	4.376	5	16 25 20.5	19.192	5
286	..	166	..	ii. 7	..	..	.....	7	7 29.03	4.850	5	12 16 30.6	19.182	5
287	35	..	..	..	.....	7.8	8 0.82	3.674	4	32 47 43.0	19.168	4
288	7	8 3.35	3.384	5	51 2 21.1	19.168	5
289	27	169	37	..	..	..	34 Cassiop. φ	5.6	8 12.65	3.677	6	32 46 16.8	19.163	6
290	..	170	40	..	..	..	35 Cassiopeiæ	6.7	8 31.26	3.863	5	26 20 34.0	19.156	5
291	8	8 59.02	3.554	4	39 10 6.7	19.144	4
292	7	9 8.88	3.413	6	49 1 45.0	19.139	6
293	7.8	9 15.50	3.552	6	39 24 23.6	19.136	6
294	7	9 19.54	3.432	3	47 29 33.3	19.135	3
295	7	9 31.05	3.561	5	39 0 45.1	19.130	5
296	8	10 29.99	4.777	3	13 19 2.2	19.104	3
297	6.7	10 30.77	3.536	6	40 52 41.1	19.104	6
298	8	11 1.22	3.566	3	39 13 19.1	19.090	3
299	50	..	..	..	.....	6.7	11 10.49	3.443	6	47 24 53.8	19.086	6
300	35	177	51	..	36	..	46 Androm. ξ	4.5	11 12.34	3.470	5	45 28 16.2	19.086	5
301	52	..	..	..	.....	7	12 0.19	4.202	5	20 0 54.9	19.064	5
302	8	12 17.67	3.411	3	50 23 16.7	19.056	3
303	25	178	53	iv. 2	37	..	36 Cassiop. ψ	5	12 40.19	4.056	5	22 52 1.1	19.045	4
304	7.8	12 42.94	3.568	4	39 49 18.3	19.043	4
305	26	180	62	..	38	36	37 Cassiop. δ	3	13 28.95	3.776	3	30 45 24.5	19.023	3
306	8	13 48.28	3.585	3	39 18 39.5	19.014	3
307	8	14 6.20	4.476	1	16 46 45.6	19.006	1
308	8.9	14 18.99	3.417	4	50 40 51.8	19.000	4
309	69	..	..	..	.....	6	15 11.30	3.462	5	47 31 55.0	18.976	5
310	6.7	15 34.16	3.467	1	47 17 53.7	18.965	1
311	71	..	..	..	.....	8	16 2.00	3.602	3	39 10 56.0	18.952	3
312	36	186	74	..	..	37	48 Androm. ω	5	16 20.27	3.496	5	45 34 44.2	18.943	5
313	7	16 48.45	3.428	5	50 39 15.1	18.930	5
314	8.9	16 57.12	3.477	4	47 6 43.7	18.926	4
315	7	1 16 57.86	+3.802	7	30 57 14.5	-18.925	7

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316	8	^h 1 ^m 17 ^s 2.68	+3.606	2	39° 18' 36".1	-18".923	2
317	7	17 3.28	3.480	5	46 56 24.9	18.922	5
318	..	188	80	iv. 3	41	..	38 Cassiop. A	5.6	17 16.68	4.237	6	20 43 8.7	18.916	6
319	81	..	..	..	.....	7	17 24.90	3.609	5	39 18 13.9	18.912	5
320	7	17 31.54	3.814	5	30 44 11.8	18.903	5
321	7	18 0.58	3.804	6	31 12 21.3	18.895	5
322	7.8	18 34.45	3.926	4	27 38 19.5	18.878	4
323	..	193	86	..	..	..	.....	7.8	18 40.16	4.242	4	20 57 52.6	18.875	4
324	37?	196	89	..	..	..	49 Androm. A	5	18 45.68	3.535	4	43 58 39.1	18.872	5
325	28	..	88	iv. 4	..	..	Cassiopeiæ	6	18 48.02	4.151	5	22 34 23.5	18.871	5
326	7.8	19 27.29	3.945	3	27 21 50.4	18.852	3
327	7	19 30.41	3.580	5	41 38 23.2	18.851	5
328	8	19 53.89	3.488	4	47 21 49.5	18.839	4
329	6	19 54.97	3.949	6	27 23 24.9	18.839	6
330	7.8	20 33.24	4.190	1	22 17 59.4	18.819	1
331	7	20 57.36	4.447	5	18 32 21.3	18.808	5
332	2	202	100	..	..	..	39 Cassiop. χ	6	21 36.37	3.821	6	31 44 53.4	18.787	6
333	7.8	21 56.37	3.972	2	27 21 13.3	18.777	2
334	102	..	..	..	.....	7	22 3.55	4.634	5	16 40 36.3	18.773	5
335	8	23 31.77	4.500	5	18 23 40.4	18.728	5
336	7.8	23 32.59	3.686	4	37 37 56.9	18.728	4
337	29	206	106	iii. 4	..	..	40 Cassiopeiæ	5.6	23 34.72	4.541	7	17 56 6.9	18.727	7
338	..	205	105	..	..	..	.....	7	23 40.17	5.314	5	13 0 15.4	18.724	5
339	(22)	..	..	..	45	..	Cassiopeiæ	6.7	23 46.58	9.863	4	4 1 16.2	18.721	5
340	7	23 50.35	3.662	5	38 48 48.0	18.719	5
341	7.8	23 51.71	3.984	3	27 33 46.6	18.718	3
342	7.8	24 35.67	3.570	5	43 51 42.0	18.695	5
343	..	207	113	..	..	..	.....	6.7	24 54.07	3.600	6	42 15 10.4	18.685	6
344	7.8	24 54.81	3.575	5	43 38 59.5	18.685	5
345	116	..	..	..	.....	7	25 23.75	3.960	5	28 37 22.7	18.669	5
346	8	25 48.89	3.574	4	44 1 31.8	18.656	4
347	121	..	..	..	.....	6.7	26 7.61	3.602	4	42 33 44.0	18.646	5
348	39	212	124	..	44	43	51 Andromedæ	5	26 23.36	3.608	4	42 20 21.5	18.638	14
349	7.8	27 19.80	3.534	2	46 49 41.0	18.607	2
350	7.8	1 27 39.05	+3.691	4	38 42 11.3	-18.596	4

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351	7.8	^h 1 ^m 27 ^s 40.85	+4.782	4	16° 13' 29".7	-18".595	4
352	8	27 54.43	3.609	2	42 42 58.2	18.588	2
353	8.9	27 58.79	3.566	3	45 8 32.1	18.586	3
354	7	27 59.20	4.774	5	16 21 40.2	18.586	5
355	..	218	129	..	..	..	52 Androm. α	6	28 0.17	3.542	6	46 35 7.8	18.585	6
356	7	28 5.81	3.568	5	45 4 52.6	18.582	5
357	130	..	..	..	.....	7	28 12.98	3.731	5	37 6 5.3	18.578	5
358	30	215	132	iv. 5	..	..	42 Cassiopeiæ	6	28 24.95	4.425	5	20 20 37.2	18.571	5
359	..	216	133	iv. 6	..	..	43 Cassiop. ω	6	28 25.95	4.257	6	22 55 26.7	18.571	6
360	6	29 19.11	3.530	7	47 40 7.4	18.542	7
361	40	221	137	..	..	..	53 Androm. τ	5	29 24.42	3.489	5	50 23 25.3	18.536	5
362	139	..	..	..	.....	7	29 52.89	3.938	3	30 25 2.1	18.523	3
363	8	30 12.78	4.838	1	16 8 19.2	18.512	1
364	41	..	142	..	..	44	Andromedæ	6	30 16.03	3.524	6	48 20 43.3	18.510	6
365	7.8	30 23.33	4.254	4	23 24 0.6	18.506	4
366	..	224	143	..	..	..	44 Cassiopeiæ	6	30 34.17	3.945	5	30 24 43.7	18.500	5
367	7.8	30 57.47	3.631	5	42 32 53.9	18.488	5
368	7	31 26.51	3.495	5	50 35 14.4	18.471	5
369	7.8	31 30.98	3.636	6	42 26 48.8	18.468	6
370	7	31 38.69	3.732	5	38 4 39.4	18.464	5
371	7	31 45.97	3.577	5	45 38 28.1	18.460	5
372	42	227	151	..	50	..	54 Andromedæ	4	31 48.98	3.683	3	40 16 24.6	18.458	7
373	8.9	32 15.72	3.582	3	45 31 44.2	18.443	3
374	6.7	32 54.20	3.598	6	44 49 13.3	18.421	6
375	8	33 51.08	4.098	4	27 18 15.3	18.387	4
376	159	..	..	..	B. F. 203	6	34 8.02	4.111	5	27 5 31.2	18.377	4
377	8	34 18.66	3.729	3	38 56 13.7	18.370	3
378	8.9	34 35.10	4.103	3	27 22 34.8	18.362	3
379	7	35 4.16	5.028	5	15 21 37.6	18.345	5
380	6.7	35 30.74	3.787	6	36 57 3.1	18.329	6
381	7.8	35 51.50	3.786	3	37 3 57.1	18.317	3
382	6	36 11.66	3.618	6	44 43 19.7	18.305	6
383	165	..	..	..	.....	7	36 15.95	5.476	6	12 44 59.4	18.302	6
384	176	50	6.7	38 51.63	3.757	6	39 0 35.1	18.209	6
385	7	1.39 4.78	+3.838	4	36 1 24.1	-18.201	4

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386	7.8	^h 1 ^m 39 ^s 17.97	+3.840	2	36° 0' 14.2	-18.193	2
387	8.9	39 30.91	3.759	2	39 8 51.9	18.185	2
388	1?	237	177	1 Persei	6	39 35.31	3.849	5	35 47 55.9	18.182	5
389	..	238	181	..	..	..	2 Persei <i>g</i>	6	40 8.07	3.738	6	40 9 8.9	18.162	6
390	31	239	184	..	55	53	45 Cassiop. ϵ	3	40 51.01	4.172	4	27 16 20.0	18.135	6
391	7.8	40 56.46	3.540	2	50 19 22.0	18.132	2
392	7	40 59.44	5.108	5	15 36 9.1	18.130	5
393	8.9	41 20.51	3.563	3	49 6 12.0	18.117	3
394	32	241	186	iv. 7	..	..	46 Cassiopeïæ	6	41 24.93	4.466	6	22 15 19.3	18.114	6
395	187	..	..	..	.....	7	41 33.57	3.716	5	41 29 56.3	18.109	5
396	44	244	190	..	..	..	55 Andromedæ	6	41 56.21	3.547	6	50 12 50.0	18.095	6
397	7.8	42 14.50	3.716	2	41 38 9.4	18.082	2
398	8.9	42 15.82	5.152	1	15 28 17.1	18.081	1
399	194	..	..	..	.....	7	42 50.09	4.876	7	17 46 52.4	18.059	7
400	7	43 15.81	3.551	3	50 17 5.6	18.044	3
401	..	250	..	..	..	..	.....	7	43 30.55	3.553	3	50 14 4.9	18.035	3
402	199	..	..	..	.....	7.8	43 35.64	3.782	4	39 14 58.4	18.031	4
403	8	43 47.15	4.259	3	26 9 15.0	18.025	3
404	..	246	..	..	..	..	.....	6	44 10.74	5.606	6	13 0 52.5	18.009	6
405	8	44 15.94	4.428	4	23 21 20.3	18.006	4
406	7.8	44 18.33	3.830	4	37 37 56.7	18.005	4
407	6.7	44 23.40	3.805	1	38 33 45.3	18.002	1
408	7	44 36.99	3.810	4	38 26 51.7	17.993	4
409	8.9	44 52.10	5.202	1	15 27 37.0	17.984	1
410	7	44 53.02	5.208	5	15 25 41.9	17.983	5
411	7	44 54.59	4.401	6	23 53 22.9	17.981	6
412	7	45 4.25	3.581	5	49 2 41.5	17.975	5
413	8.9	45 32.01	3.834	2	37 46 21.6	17.957	2
414	8	45 45.27	3.582	5	49 10 9.6	17.949	5
415	8	45 48.31	4.434	2	23 32 57.8	17.947	2
416	207	..	..	..	.....	6	46 8.82	3.690	6	43 50 18.3	17.934	6
417	8	46 9.16	3.836	2	37 51 19.6	17.933	2
418	7	46 27.90	3.584	5	49 14 20.9	17.922	5
419	45 Cephei	254	208	ii. 8	47 Cassiopeïæ	6	46 31.00	5.535	6	13 38 30.0	17.919	6
420	211	3 Persei	6	1 46 32.68	+3.740	6	41 43 51.5	-17.918	6

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421	33	258	210	iv. 8	62	..	48 Cassiopeiæ	5	^h 1 ^m 46 ^s 33.86	+4.712	6	20° 1' 20.3"	17.917	6
422	7	46 39.13	5.020	4	17 4 37.8	17.914	4
423	7.8	46 45.03	3.692	2	43 53 33.8	17.910	2
424	6	46 47.48	6.607	6	9 37 31.8	17.908	6
425	7.8	47 3.93	4.755	5	19 37 50.7	17.897	5
426	7	47 24.62	6.699	6	9 26 11.5	17.883	6
427	34	260	215	iii. 5	64	57	50 Cassiopeiæ	4	47 27.30	4.872	4	18 30 25.6	17.882	6
428	..	259	217	ii. 9	..	..	49 Cassiopeiæ	5.6	47 45.93	5.358	6	14 48 28.3	17.869	6
429	6.7	48 16.44	4.299	3	26 17 18.3	17.849	3
430	7.8	48 32.55	6.043	5	11 34 26.1	17.838	5
431	7.8	48 33.85	3.646	5	46 30 25.6	17.837	5
432	7	48 42.23	3.866	3	37 24 13.9	17.832	3
433	7.8	48 43.29	4.772	5	19 42 43.6	17.831	5
434	..	265	219	..	..	..	52 Cassiopeiæ	7	48 51.72	4.319	7	26 1 24.9	17.825	7
435	..	264	220	iii. 6	..	..	51 Cassiopeiæ	7	49 0.22	5.155	5	16 20 17.5	17.820	6
436	..	266	221	..	..	..	53 Cassiopeiæ	7	49 4.84	4.294	7	26 32 5.8	17.816	7
437	..	269	224	..	..	..	4 Persei	5.6	49 43.83	3.902	6	36 26 13.5	17.791	6
438	7	49 53.72	3.877	5	37 17 43.5	17.784	5
439	7.8	50 26.57	3.708	5	44 4 51.8	17.762	5
440	..	270	..	..	..	..	.....	7	50 31.91	4.349	5	25 49 0.7	17.759	5
441	7.8	50 49.61	3.916	2	36 13 39.4	17.747	2
442	230	..	..	..	.....	8	51 2.05	4.314	4	26 32 6.7	17.739	4
443	8.9	51 28.57	6.217	4	11 13 15.0	17.720	4
444	8	51 32.31	4.314	3	26 37 56.4	17.714	3
445	8	51 47.78	6.225	4	11 13 16.9	17.707	4
446	8	52 15.05	4.339	2	26 18 29.2	17.688	2
447	45	276	236	..	67	59	57 Androm. γ	2.3	52 17.14	3.623	3	48 35 16.9 } 17.4 }	17.687	15 } 17 }
448	..	274	239	iii. 7	..	60	54 Cassiopeiæ	6	52 57.66	4.869	6	19 20 58.2	17.658	6
449	7	53 11.19	3.816	5	40 16 24.9	17.650	5
450	7.8	54 6.77	3.927	4	36 36 22.4	17.611	4
451	8	55 3.66	3.868	3	38 47 3.3	17.571	3
452	7.8	55 10.15	6.169	4	11 43 25.3	17.567	4
453	8	55 52.08	3.681	3	46 32 56.9	17.538	3
454	..	282	6	56 8.76	5.206	5	16 52 31.5	17.526	5
455	(2)	Persei	7	1 56 36.63	+3.945	2	36 35 21.5	+17.505	2

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456	7	^h 1 ^m 56 ^s 44.32	+3.688	3	46° 26' 52".4	-17".500	3
457	7.8	56 50.95	3.913	4	37 39 58.7	17.495	4
458	255	..	..	..	.....	7.8	57 22.59	3.951	4	36 34 33.6	17.472	4
459	256	..	..	..	.....	6.7	57 27.66	3.935	5	37 3 43.7	17.469	5
460	7.8	58 2.34	3.920	4	37 41 25.4	17.445	4
461	..	289	259	..	..	63	5 Persei <i>h</i>	6	58 20.85	4.074	6	33 15 32.3	17.431	6
462	..	293	263	..	..	..	} 59 Androm.	7.8	59 24.05	3.590	5	51 51 50.3	17.386	5
463	..	294	..	..	..	..		7	59 24.92	3.590	5	51 51 32.3	17.385	5
464	..	292	264	v. 3	..	..	55 Cassiopeiæ	6	1 59 43.45	4.539	6	24 22 29.6	17.372	5
465	7.8	2 0 26.15	3.968	4	36 40 52.4	17.339	3
466	2	..	..	..	.....	6.7	0 54.94	3.934	6	37 50 25.5	17.319	6
467	..	299	3	..	..	64	6 Persei	6	1 2.34	3.875	6	39 49 27.8	17.313	6
468	..	300	4	..	..	..	60 Androm. <i>b</i>	5.6	1 21.38	3.705	7	46 40 0.3	17.300	7
469	7.8	1 24.39	6.080	4	12 38 5.2	17.298	4
470	7	1 55.45	3.784	5	43 24 36.3	17.275	5
471	8	2 10.28	6.525	3	11 6 45.6	17.264	3
472	8.9	2 12.33	3.781	1	43 36 31.2	17.262	1
473	7.8	2 40.99	3.769	5	44 12 24.8	17.241	5
474	7	2 51.16	3.930	5	38 22 58.6	17.233	5
475	21	..	..	..	.....	8	3 35.48	4.091	5	33 51 45.6	17.200	5
476	22	..	..	..	.....	7	3 40.46	4.092	6	33 50 8.8	17.196	6
477	8.9	3 41.53	3.933	3	38 20 0.8	17.196	3
478	8	3 55.10	6.531	4	11 14 12.4	17.186	4
479	8	3 56.68	6.511	4	11 18 13.0	17.184	4
480	7.8	3 56.89	3.943	5	38 10 10.1	17.184	5
481	7	3 58.65	3.678	3	48 25 28.0	17.183	3
482	8	4 5.62	3.776	4	44 13 43.7	17.178	4
483	7.8	4 14.12	3.685	6	48 11 42.2	17.171	6
484	24	..	..	..	.....	8	4 14.25	4.135	4	32 52 8.0	17.171	4
485	..	310	27	..	..	..	8 Persei	6	4 39.03	4.133	5	32 59 23.7	17.153	5
486	..	311	29	..	..	..	7 Persei <i>z</i>	6.7	4 47.92	4.119	6	33 22 20.3	17.146	6
487	7.8	5 31.65	4.005	5	36 36 25.1	17.112	5
488	4 Persei	316	35	..	..	..	61 Andromedæ	6.7	5 49.30	4.111	6	33 45 1.0	17.099	6
489	7	5 53.06	3.690	3	48 17 50.2	17.096	3
490	36	..	..	..	B. F. 279	7	2 5 58.49	+4.114	6	33 42 56.7	-17.092	6

No.	Hevelius.	Bessel's Bradley.	Piazz.	Wollaston.	Pond.	Argelander.	Flamsteed's No. and Bayer's Character.	Magnitude.	Right Ascension. Jan. 1, 1810.	Annual Precession.	No. of Obs.	North Polar Distance. Jan. 1, 1810.	Annual Precession.	No. of Obs.
491	8	^h 2 ^m 6 ^s 3.59	+4.002	2	36° 47' 23".8	-17".088	2
492	7.8	6 9.97	3.698	1	47 59 12.2	17.083	1
493	7	6 54.64	3.957	5	38 19 23.0	17.050	5
494	41	..	..	..	.....	6.7	7 2.99	3.851	6	41 55 57.5	17.043	6
495	5 Persei	319	43	..	..	..	62 Androm. c	6	7 4.87	3.810	5	43 30 14.4	17.041	5
496	7	7 57.82	3.641	5	51 2 49.2	17.000	5
497	7	8 14.32	4.031	5	36 22 12.1	16.988	5
498	..	324	53	..	..	..	63 Andromedæ	6	8 27.34	3.893	6	40 43 39.8	16.978	6
499	..	325	..	..	..	..	.....	7	8 27.51	3.815	2	43 34 10.1	16.977	2
500	7.8	8 49.34	4.026	1	36 37 43.4	16.961	1
501	..	326	55	..	73	..	9 Persei i	6	9 11.66	4.087	6	35 1 55.0	16.943	6
502	7	10 34.65	3.964	5	38 47 27.0	16.878	5
503	47?	..	61	..	..	..	Andromedæ	6	11 3.64	3.686	6	49 28 25.6	16.855	6
504	47?	..	62	..	..	..	Andromedæ	7	11 5.83	3.688	5	49 23 40.2	16.853	5
505	7.8	11 13.77	4.040	4	36 40 51.9	16.847	4
506	46?	..	60	..	74	..	Cephei	6	11 17.72	7.535	7	9 12 45.3	16.844	7
507	6 Persei	331	64	..	..	..	64 Andromedæ	5.6	11 51.46	3.909	6	40 51 47.9	16.818	5
508	..	330	65	..	..	..	10 Persei	7	11 56.35	4.136	6	34 15 37.8	16.814	6
509	..	334	71	..	..	..	65 Andromedæ	5.6	13 1.05	3.923	6	40 35 21.8	16.762	6
510	8	13 9.21	6.798	3	11 7 28.1	16.755	3
511	35	332	72	v. 4	75	..	B.F. 292, Cas. i	4	13 34.87	4.763	5	23 27 41.1	16.735	8
512	7	14 29.29	6.010	5	14 8 3.8	16.692	5
513	78	..	..	..	.....	7	15 6.71	4.008	5	38 18 48.1	16.661	5
514	..	337	79	..	..	..	66 Andromedæ	6.7	15 10.88	3.945	6	40 17 16.5	16.658	6
515	7.8	16 38.27	5.142	2	19 53 46.3	16.587	2
516	86	..	..	..	.....	7	16 58.03	5.185	6	19 33 15.2	16.570	6
517	7	17 51.95	4.046	3	37 41 0.3	16.526	3
518	6	18 12.44	3.666	6	51 43 4.4	16.510	6
519	7.8	18 18.59	5.129	3	20 12 18.3	16.504	3
520	7	18 29.44	3.664	4	51 53 58.4	16.496	4
521	7.8	18 35.74	4.821	5	23 25 59.5	16.490	5
522	7.8	18 48.39	5.166	3	19 55 44.1	16.480	3
523	9	19 1.46	5.154	2	20 ³ / ₄ 35.7	16.469	2
524	36 Cassio.	348	97	iii. 8	78	..	B. F. 306	5	20 14.02	5.427	6	18 1 29.3	16.408	5
525	100	6.7	2 20 21.48	+4.032	6	38 32 20.1	-16.405	6

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526	7	^h 2 ^m 20 ^s 30.23	+4.851	5	23° 20' 0.3	-16.395	5
527	..	344	6	21 16.32	7.747	3	9 22 28.4	16.356	6
528	8.9	21 22.78	5.198	2	19 56 20.7	16.350	2
529	8.9	22 41.92	5.255	3	19 36 39.4	16.283	3
530	7	23 37.52	3.699	5	51 10 30.2	16.236	5
531	115	..	..	..	.....	6	23 49.20	4.041	6	38 52 37.1	16.224	6
532	..	353	..	..	..	..	.....	7.8	24 30.01	5.330	4	19 12 16.4	16.191	4
533	7.8	24 42.54	4.076	3	38 1 22.6	16.180	3
534	7	25 0.41	3.760	5	48 46 16.5	16.165	5
535	..	358	..	..	..	..	.....	7	26 13.58	4.965	3	22 45 43.3	16.101	3
536	132	..	..	..	.....	6	27 12.43	4.092	6	38 1 26.2	16.051	6
537	..	366	..	..	..	..	.....	6	28 39.39	4.970	5	22 59 37.9	15.976	5
538	8	29 25.15	5.411	2	19 5 34.7	15.934	2
539	..	369	142	..	..	..	11 Persei	6	29 31.85	4.197	6	35 42 52.1	15.928	6
540	6	29 40.85	4.134	6	37 17 37.0	15.920	6
541	8.9	30 0.25	3.957	3	42 27 28.1	15.903	3
542	7	371	146	..	..	..	12 Persei	5.6	30 17.94	3.737	6	50 37 3.9	15.887	6
543	6.7	30 20.76	3.956	6	42 33 18.1	15.885	6
544	7.8	30 23.79	7.384	4	10 41 45.5	15.882	4
545	8	374	150	..	83	72	13 Persei 9	4	31 16.87	3.992	7	41 35 2.9 2.7	15.835	23 68
546	..	376	154	..	..	..	14 Persei	6	31 45.66	3.847	6	46 31 10.7	15.809	6
547	7.8	31 51.63	5.448	6	19 3 12.5	15.803	6
548	8.9	32 1.01	5.290	2	20 18 33.6	15.795	2
549	7.8	33 5.88	5.945	6	16 3 42.4	15.737	6
550	8.9	33 6.44	5.304	2	20 18 47.2	15.736	2
551	8	33 28.39	4.017	3	41 9 25.2	15.716	3
552	6.7	34 7.76	5.704	4	17 31 22.6	15.680	4
553	7	35 9.40	3.861	5	46 32 3.5	15.625	5
554	B. F. 341	7	35 19.12	4.320	6	33 46 11.7	15.616	6
555	7	35 32.62	3.861	4	46 35 56.3	15.603	4
556	B. F. 343	6.7	35 34.93	4.325	6	33 43 6.7	15.601	6
557	7	36 21.38	4.861	5	25 9 46.0	15.559	5
558	6.7	36 33.73	5.756	4	17 25 15.3	15.546	4
559	9	..	179	..	89	..	15 Persei η	4	36 55.14	4.280	6	34 54 8.8 9.9	15.527	23 7
560	8	2 37 4.41	+3.807	4	48 51 54.4	-15.518	4

No.	Hevelius.	Bessel's Bradley.	Piazz.	Wollaston.	Pond.	Argelander.	Flamsteed's No. and Bayer's Character.	Magnitude.	Right Ascension. Jan. 1, 1810.	Annual Precession.	No. of Obs.	North Polar Distance. Jan. 1, 1810.	Annual Precession.	No. of Obs.
561	180	..	..	..	.....	7.8	^h 2 ^m 37 ^s 16.82	+ 4.132	5	38° 30' 56".4	-15".506	5
562	7	37 30.08	5.692	6	17 54 4.8	15.494	6
563	8.9	38 22.62	3.812	2	48 51 7.1	15.446	2
564	6.7	38 23.14	4.167	7	37 45 47.5	15.446	6
565	184	..	..	..	.....	8	38 43.75	4.137	3	38 35 37.5	15.426	3
566	8	39 12.85	3.902	3	45 44 3.3	15.399	3
567	7	39 24.03	3.898	5	45 53 54.2	15.389	5
568	6	39 27.62	4.173	7	37 47 36.9	15.385	7
569	7	39 43.47	5.690	9	18 6 33.4	15.371	9
570	8	40 6.40	4.913	3	24 58 41.5	15.349	3
571	7.8	40 8.97	3.821	5	48 46 11.7	15.347	5
572	8.9	40 35.06	5.414	3	20 9 57.3	15.322	3
573	11	399	190	..	93	..	18 Persei τ	5.6	40 51.71	4.171	10	38 1 29.5	15.307	23
574	193	..	..	..	.....	7	41 12.21	4.112	5	39 37 7.8	15.288	5
575	8	41 13.52	6.910	1	12 40 52.1	15.285	1
576	8	41 16.41	3.975	5	43 37 33.6	15.284	5
577	47?	392	191	ii. 10	..	..	Cephei	6.7	41 24.10	7.378	12	11 21 2.2	15.276	12
578	8	42 16.50	4.114	3	39 42 18.7	15.226	3
579	6.7	42 47.23	3.987	5	43 28 40.7	15.197	5
580	..	396	..	..	..	..	.....	7	43 8.73	8.406	6	9 17 10.0	15.176	6
581	206	..	..	..	.....	6.7	43 35.91	4.129	5	39 30 59.5	15.151	5
582	8	43 39.82	7.808	4	10 27 43.1	15.147	4
583	8	43 40.14	3.829	4	48 58 22.2	15.147	4
584	7	43 45.24	3.991	5	43 28 58.5	15.142	5
585	6	43 46.67	3.987	6	43 36 56.5	15.140	6
586	8.9	43 56.12	4.178	2	38 16 34.9	15.132	2
587	7.8	45 50.94	3.846	5	48 39 42.4	15.022	5
588	7	46 23.11	3.884	6	47 24 19.2	14.991	6
589	13	411	217	..	..	..	22 Persei π	4	46 39.12	3.785	6	51 6 23.9	14.975	13
590	5.6	46 59.69	4.004	9	43 32 59.4	14.955	9
591	220	..	..	..	B. F. 367	6.7	47 24.06	4.191	6	38 24 50.5	14.932	6
592	6	47 25.92	3.823	7	49 44 1.0	14.930	7
593	8	47 59.41	3.856	4	48 37 24.2	14.897	4
594	7	49 18.38	7.874	4	10 36 25.4	14.820	4
595	..	402	..	i.6	6	2 49 30.00	+11.937	5	5 47 44.5	-14.809	7

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596	8	^h 2 ^m 49 ^s 47.05	+5.477	4	20° 31' 42.8	-14.792	4
597	9	49 47.88	7.868	2	10 38 39.9	14.791	2
598	7	49 49.29	3.776	3	51 53 0.4	14.790	3
599	..	..	..	..	..	..	.....	7	49 50.53	7.120	5	12 33 9.5	14.789	5
600	14	422	234	..	98	..	23 Persei γ	3	51 6.27	4.262	6	37 14 51.4	14.714	12
601	15	..	236	..	99	..	B. F. 378	5	51 21.03	4.412	3	34 3 5.3	14.699	4
602	37	417	237	iii. 9	..	..	B. F. 370	5.6	51 38.95	6.170	12	16 20 39.7	14.681	12
603	..	..	..	..	..	..	.....	9	52 21.11	8.044	3	10 23 42.2	14.638	3
604	..	..	..	..	..	..	.....	7.8	52 29.09	6.143	4	16 32 28.8	14.631	4
605	..	..	..	..	..	..	.....	7.8	52 32.25	7.282	3	12 13 52.3	14.628	3
606	..	..	..	..	..	..	.....	7	52 36.42	7.420	5	11 51 27.2	14.624	5
607	17	429	246	..	101	..	25 Persei ε	4	53 2.50	3.786	6	51 54 18.9	14.598	6
608	..	..	..	..	..	..	.....	7	53 10.29	6.173	4	16 26 22.8	14.590	4
609	..	..	..	..	..	..	.....	7	54 0.34	6.175	4	16 29 26.8	14.540	4
610	..	..	..	..	..	..	.....	7.8	54 11.67	4.223	2	38 33 38.6	14.528	2
611	..	..	..	..	..	..	.....	6.7	54 29.49	4.226	6	38 31 45.5	14.511	6
612	..	..	..	..	..	..	.....	6.7	55 4.02	6.117	5	16 51 42.0	14.476	5
613	18	..	253	..	105	81	B. F. 391 Per. δ	4	55 24.84	4.128	4	41 7 25.0	14.455	6
614	..	..	..	..	..	..	.....	8.9	55 35.94	8.179	2	10 16 33.9	14.443	2
615	19	436	254	..	106	..	26 Persei β	2.3	55 51.17	3.852	3	49 47 8.2 9.4	14.428	12 3
616	48	431	255	ii. 11	108	..	Cephei	5	56 40.30	7.106	6	12 58 55.8	14.378	6
617	20	438	256	..	107	82	27 Persei ζ	4.5	56 43.74	3.971	6	45 52 21.4 21.1	14.374	6 29
618	..	..	..	..	..	..	.....	7	58 5.51	4.243	4	38 34 3.8	14.291	4
619	..	..	..	..	..	..	.....	8.9	58 35.35	4.087	1	42 40 34.2	14.261	1
620	21	..	265	..	..	..	28 Persei ω	5	59 3.68	3.827	5	51 7 11.1	14.231	6
621	..	..	..	..	..	..	.....	6	59 39.26	3.907	5	48 21 6.3	14.195	5
622	..	442	..	..	..	..	.....	6.7	2 59 42.14	5.153	6	24 20 24.0	14.193	6
623	..	..	268	..	..	..	.....	8	3 0 13.68	4.096	2	42 36 50.2	14.160	2
624	..	..	269	..	..	..	.....	6.7	0 15.46	4.099	5	42 32 50.8	14.158	5
625	..	..	..	..	..	..	.....	8	0 43.30	4.091	2	42 48 19.7	14.129	2
626	..	..	..	..	..	..	.....	8	0 58.12	4.089	2	42 55 11.5	14.114	2
627	..	..	..	..	..	..	.....	6.7	1 20.27	4.500	6	33 34 45.2	14.091	6
628	6	2 2.48	5.554	6	20 58 46.4	14.047	6
629	6.7	2 17.27	4.215	5	39 45 39.2	14.032	5
630	5	5.6	3 2 22.98	+3.921	6	48 12 58.6	-14.026	6

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631	6	^h 3 ^m 2 ^s 41.29	+4.216	6	39° 46' 42".4	-14".007	6
632	8	2 52.61	4.105	2	42 41 20.4	13.995	2
633	7	3 12.94	4.012	6	45 22 5.0	13.974	6
634	1	448	7	v. 5	..	..	Camelopardi	5	3 24.94	5.119	6	25 3 22.5	13.961	6
635	8	3 25.17	4.117	4	42 25 57.6	13.961	4
636	..	453	14	..	..	..	30 Persei	6	5 3.18	3.979	6	46 41 1.4	13.857	6
637	..	452	15	..	..	..	29 Persei	6	5 9.61	4.200	6	40 29 5.9	13.850	6
638	8	5 20.34	4.181	4	40 56 11.8	13.839	4
639	6	5 29.27	3.840	6	51 25 30.9	13.829	6
640	..	455	16	..	..	..	31 Persei	5	5 40.11	4.197	11	40 36 37.1	13.818	12
641	..	449	..	..	..	..	.....	7	5 42.32	6.142	5	17 29 4.7	13.816	5
642	i. 7	..	..	.....	6	6 6.04	16.979	4	3 59 19.5	13.792	6
643	8	6 15.39	5.884	4	19 0 35.5	13.782	4
644	8	6 30.50	4.134	2	42 49 58.4	13.765	2
645	27	..	..	..	.....	6	8 18.67	5.064	6	26 6 24.5	13.651	6
646	28	..	..	..	.....	6	8 27.14	4.170	6	41 37 23.1	13.642	6
647	..	458	30	..	..	..	32 Persei <i>l</i>	6	8 45.54	3.970	6	47 22 3.0	13.622	6
648	8	8 49.79	4.128	2	42 45 37.8	13.618	2
649	37	..	..	..	.....	6	9 48.79	4.182	6	41 28 41.5	13.554	6
650	24	464	41	..	114	89	33 Persei α	2.3	10 49.07	4.212	8	40 49 34.7 } 34.7 }	13.489	23 } 4 }
651	..	459	..	..	..	..	.....	7	10 51.48	5.970	5	18 48 53.0	13.487	5
652	7	10 59.92	3.913	4	49 28 54.6	13.478	4
653	8	11 5.27	4.185	2	41 32 47.6	13.472	2
654	7	11 23.80	3.919	4	49 21 6.5	13.452	4
655	8	11 43.78	4.192	2	41 25 59.4	13.431	2
656	8	11 57.11	6.008	3	18 39 22.4	13.416	3
657	8	11 58.47	5.982	3	18 48 50.7	13.415	3
658	8	12 15.56	3.941	4	48 42 21.4	13.394	3
659	6.7	12 31.54	4.191	8	41 33 39.9	13.378	8
660	7.8	12 34.44	4.215	5	40 56 11.6	13.376	5
661	6.7	12 37.66	3.920	8	49 25 37.4	13.372	8
662	2	..	51	..	116	..	Camelopardi	4	13 46.70	4.750	6	30 44 5.2	13.297	6
663	7.8	14 6.67	4.001	5	47 1 14.1	13.274	5
664	52	7.8	14 8.52	4.217	5	41 4 32.7	13.273	5
665	8.9	3 14 15.71	+6.829	2	14 55 1.6	-13.265	2

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666	7	^h 3 ^m 14 ^s 27.16	+5.402	4	23° 14' 27.5	-13.252	4
667	7.8	14 27.20	5.421	4	23 4 54.3	13.252	4
668	..	476	53	6.7	14 36.06	4.198	6	41 36 40.7	13.242	6
669	..	471	..	..	..	..	.....	7	14 39.35	6.287	5	17 18 52.1	13.239	5
670	8	14 44.66	4.234	3	40 43 14.9	13.233	3
671	3	..	54	..	118	..	Camelopardi	4	14 50.04	4.688	3	31 47 35.5	13.227	6
672	8.9	15 9.39	4.029	2	46 16 54.9	13.206	2
673	8.9	15 10.20	4.028	2	46 19 58.8	13.205	2
674	56	..	..	..	.....	6	15 18.72	4.232	6	40 49 22.9	13.195	6
675	7	15 25.20	4.030	5	46 17 44.0	13.188	5
676	8	15 25.74	4.202	3	41 36 2.0	13.188	3
677	7.8	15 26.56	6.570	1	16 1 51.6	13.187	1
678	4	..	57	..	..	..	Camelopardi	5	15 35.09	4.494	4	35 13 5.0	13.177	6
679	9	15 40.08	6.299	2	17 18 54.2	13.172	2
680	7.8	15 44.03	4.010	5	46 55 8.2	13.167	5
681	..	478	59	..	..	..	34 Persei	6	15 50.54	4.221	12	41 9 37.7	13.160	12
682	9	16 15.78	4.209	2	41 30 47.1	13.133	2
683	8	16 22.35	4.211	3	41 27 12.1	13.123	3
684	7	16 52.41	6.867	5	14 54 43.6	13.092	5
685	7	16 54.97	6.617	4	15 55 1.4	13.090	4
686	25	479	64	..	120	..	35 Persei σ	5	17 14.06	4.167	6	42 40 20.6	13.069	6
687	..	480	66	..	..	..	.....	6	17 15.25	4.171	5	42 33 39.3	13.067	5
688	8	17 40.25	3.992	4	47 41 8.8	13.040	4
689	8	17 47.70	4.228	1	41 12 37.5	13.032	1
690	7	17 59.13	4.218	5	41 27 13.0	13.019	5
691	6	18 12.46	4.166	6	42 47 56.8	13.004	6
692	8.9	18 15.78	4.209	2	41 42 31.2	13.001	2
693	7	18 16.65	4.227	6	41 15 39.3	13.000	6
694	..	483	..	..	..	..	.....	6	18 46.29	4.174	5	42 38 7.8	12.967	5
695	7	18 57.02	3.926	5	49 53 59.5	12.955	5
696	7.8	19 17.13	4.061	4	45 49 8.2	12.933	4
697	..	484	71	..	..	..	36 Persei	7	19 19.69	4.104	6	44 35 53.8	12.930	6
698	7.8	19 24.47	3.991	5	47 54 34.9	12.924	5
699	7	19 39.41	4.062	6	45 48 6.2	12.908	6
700	8.9	3 19 41.15	+7.653	1	12 34 24.1	-12.907	1

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701	7	^h 3 ^m 19 ^s 42.98	+3.934	5	49° 44' 15.5"	-12.904	5
702	6	19 56.48	4.177	6	42 42 18.9	12.889	6
703	7	21 6.00	3.908	6	50 45 8.1	12.811	6
704	8.9	21 33.88	4.230	1	41 31 52.8	12.780	1
705	8	21 41.76	4.068	3	45 50 51.2	12.771	3
706	7.8	22 44.80	4.007	5	47 45 5.7	12.699	5
707	26	488	84	..	123	..	37 Persei ♀	5	23 2.44	4.200	6	42 27 3.8	12.679	6
708	8	23 3.49	4.008	4	47 45 29.6	12.678	4
709	7	23 6.03	7.737	5	12 30 9.6	12.676	5
710	6.7	23 19.30	6.661	5	16 5 14.0	12.660	5
711	7	23 55.08	5.802	5	20 47 5.4	12.620	5
712	8	24 45.58	7.849	2	12 17 13.0	12.562	2
713	6	25 11.68	4.005	5	48 3 14.4	12.533	5
714	7.8	25 15.32	4.081	4	45 50 2.6	12.529	4
715	7.8	25 19.05	4.081	4	45 50 5.4	12.524	4
716	94	..	..	..	.....	5.6	25 46.87	5.083	6	27 24 52.5	12.493	6
717	7	26 12.03	4.007	6	48 5 23.0	12.464	6
718	7	26 22.39	6.106	5	19 0 12.3	12.453	5
719	97	..	..	..	.....	6.7	27 9.10	4.840	6	30 39 24.7	12.399	6
720	8	27 13.13	4.840	2	30 38 38.9	12.394	2
721	102	v. 6	..	..	.....	6	28 10.84	5.501	6	23 24 38.1	12.329	6
722	27	499	106	..	127	94	39 Persei ♂	3	29 26.76	4.209	9	42 49 ^{54.3} ^{54.0}	12.241	27) 77)
723	6	..	105	..	..	..	Camelopardi	5	29 32.23	5.121	5	27 16 11.9	12.237	5
724	5	..	111	iii.10	..	..	Camelopardi	5	30 30.10	6.106	5	19 16 14.8	12.168	5
725	7	31 45.80	5.528	3	23 26 15.0	12.079	3
726	7	..	121	v. 7	..	..	Camelopardi	5	32 15.28	5.352	6	25 4 37.7	12.045	6
727	7.8	32 18.51	5.989	4	20 5 23.7	12.041	4
728	30	506	122	..	128	..	41 Persei ♀	4	32 19.34	4.029	4	48 1 59.8	12.041	5
729	7.8	32 41.88	4.011	2	48 36 6.0	12.014	2
730	8	32 41.97	4.137	2	45 0 30.6	12.013	2
731	6	32 44.46	4.141	6	44 55 35.0	12.011	6
732	7.8	33 4.91	4.396	4	38 53 45.4	11.987	4
733	7	33 9.53	3.907	3	51 56 2.1	11.982	3
734	7.8	33 36.31	4.389	5	39 4 26.5	11.950	5
735	7	3 34 12.10	+4.087	3	46 31 45.2	-11.909	3

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736	8	^h 3 ^m 34 ^s 36.51	+4.387	3	39° 13' 23.1"	-11.880	3
737	6.7	34 45.24	6.701	5	16 30 21.9	11.870	5
738	7	35 12.19	4.452	6	37 56 33.5	11.839	6
739	7.8	35 23.08	5.970	4	20 23 27.5	11.826	4
740	6.7	36 4.07	4.089	6	46 38 6.7	11.777	6
741	7	36 10.52	4.447	6	38 6 46.2	11.770	6
742	7	36 14.16	6.254	5	18 45 38.9	11.765	5
743	6	36 53.23	4.129	6	45 37 27.7	11.719	6
744	8	37 6.34	4.452	3	38 5 5.9	11.704	3
745	8	36 7.63	7.299	2	14 23 3.0	11.702	2
746	49	..	160	i. 8	..	..	Cephei	6	38 54.54	9.349	7	9 51 10.6	11.576	7
747	8.9	39 17.48	4.465	3	38 0 49.0	11.548	3
748	8.9	39.53.23	7.331	2	14 23 44.2	11.505	2
749	8	40 17.61	6.060	4	20 7 5.3	11.476	4
750	i. 9	142	..	.....	6	40 20.22	15.658	5	4 58 27.1	11.473	6
751	8	40 27.13	7.333	3	14 24 47.0	11.465	3
752	8	40 31.70	4.464	4	38 8 59.8	11.459	4
753	8	..	177	..	..	..	Camelopardi	5	40 45.52	5.176	4	27 30 1.7	11.442	5
754	9	..	178	..	..	..	Camelopardi	6	41 1.71	5.012	6	29 27 45.5	11.423	6
755	7.8	41 18.28	4.478	5	37 55 57.1	11.403	5
756	8	41 20.37	8.426	4	11 35 30.1	11.401	4
757	6.7	41 23.02	4.457	6	38 21 11.1	11.397	6
758	7	41 46.40	7.438	6	14 8 4.1	11.370	6
759	186	..	..	..	B. F. 479	5	42 19.75	4.262	6	42 41 56.9	11.329	6
760	33	533	188	..	..	98	43 Persei A	5	42 31.54	4.388	3	39 52 6.3	11.315	5
761	9	42 32.27	8.385	2	11 43 10.2	11.314	2
762	6.7	44 4.65	7.104	6	15 21 21.5	11.203	6
763	7.8	44 4.93	8.511	5	11 30 26.4	11.203	5
764	7	44.21.91	4.043	6	48 41 2.5	11.182	6
765	35	539	196	..	..	..	45 Persei s	3	45 8.16	3.983	8	50 33 ^{4.1} _{4.7}	11.126	9) 27)
766	i. 10	146	..	.....	6	45 28.24	12.546	5	6 41 44.1	11.102	5
767	6.7	45 52.85	3.947	6	51 43 3.1	11.072	6
768	7.8	47 3.22	4.885	2	31 35 57.5	10.986	2
769	6.7	47 4.21	3.950	6	51 44 5.6	10.985	6
770	7.8	3 47 12.25	+4.884	2	31 37 27.8	-10.975	2

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771	6.7	^h 3 ^m 47 ^s 30.18	+6.737	5	16° 58' 0".8	—10".953	5
772	10	..	208	Camelopardi	5.6	48 41.96	4.908	6	31 23 14.2	10.866	6
773	..	..	..	..	..	..	.....	7	48 59.85	5.476	5	25 0 57.9	10.844	5
774	..	..	..	i. 11	..	..	.....	6	49 22.37	12.038	5	7 9 21.2	10.816	6
775	..	..	..	..	..	..	.....	7.8	50 6.64	6.008	5	20 58 22.8	10.762	5
776	..	..	223	..	..	..	.....	6	52 24.86	4.259	6	43 36 13.4	10.591	6
777	37	549	224	..	151	..	47 Persei λ	4	52 28.55	4.412	4	40 10 40.2	10.587	6
778	..	..	..	..	..	..	.....	6	53 26.53	4.991	6	30 36 54.1	10.515	6
779	..	..	..	i. 12	..	..	.....	6	54 37.00	9.773	6	9 39 38.5	10.428	6
780	..	..	..	..	..	..	.....	7	54 49.05	6.042	5	21 0 14.6	10.413	5
781	38	557	240	..	154	..	48 Persei c	5	54 54.41	4.301	6	42 48 29.3	10.406	6
782	..	..	..	..	..	..	.....	7	55 44.94	7.095	4	15 51 44.2	10.343	4
783	..	..	..	..	..	..	.....	6.7	56 20.43	7.104	6	15 51 35.3	10.299	6
784	..	..	..	ii. 13	..	..	.....	6	56 42.54	7.542	6	14 23 8.8	10.271	6
785	..	..	..	..	..	..	.....	7.8	56 48.19	9.895	2	9 32 42.3	10.264	3
786	..	..	..	..	..	..	.....	7	56 57.80	6.215	5	20 2 55.0	10.251	5
787	..	..	..	..	..	..	.....	7.8	57 9.66	7.120	3	15 49 49.4	10.237	3
788	..	..	259	..	..	..	.....	8	3 59 42.26	4.445	1	40 1 21.5	10.044	1
789	11	..	260	..	..	..	Camelopardi	6	4 0 14.05	5.188	12	28 38 37.7	10.004	12
790	..	..	..	..	..	..	.....	8.9	0 28.80	4.620	3	36 47 37.0	9.985	3
791	..	..	..	..	..	..	.....	7.8	0 41.36	5.185	2	23 41 44.9	9.969	2
792	..	..	..	..	..	..	.....	8	0 46.50	4.459	2	39 48 34.9	9.963	2
793	39	564	1	..	155	..	51 Persei μ	4	0 59.20	4.352	6	42 5 ^{12.1} _{11.4}	9.947 ²¹ ₄₈	6
794	..	..	..	..	..	..	.....	8	1 2.51	5.529	3	25 14 6.0	9.943	3
795	..	..	..	..	..	..	.....	6	1 28.89	4.882	6	32 37 44.9	9.910	6
796	..	..	..	..	..	..	.....	7.8	1 29.42	5.200	2	28 34 38.1	9.909	2
797	(12)	..	7	..	..	..	B. F. 512. Camel.	6	1 56.87	4.618	11	36 52 45.9	9.874	11
798	40	565	8	..	..	..	52 Persei f	5	1 59.09	4.044	6	50 0 36.2	9.871	6
799	..	..	..	..	..	..	.....	7	2 54.01	4.476	4	39 37 21.1	9.801	4
800	13	..	10	v. 8	..	..	Camelopardi	6	2 54.24	5.530	12	25 20 26.0	9.801	12
801	12	..	..	..	..	..	Camelopardi	8	3 53.32	4.620	3	36 57 59.8	9.726	3
802	41	..	18	..	157	..	B. F. 515. Pers. δ^1	5	4 0.01	4.452	4	40 11 9.0	9.718	4
803	..	..	..	..	..	..	B. F. 517	6.7	5 0.21	4.443	6	40 25 42.1	9.642	6
804	6	5 0.90	4.110	6	48 20 21.1	9.640	6
805	14?	Camelopardi	8	4 5 4.32	+5.118	1	29 45 10.8	— 9.636	1

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806	14?	Camelopardi	7.8	^h 4 ^m 5 ^s 32	+5.124	3	29° 40' 54.8	-9.634	3
807	7	5 11.89	8.218	5	12 49 20.0	9.626	5
808	22	..	..	..	.....	6	5 20.89	5.121	12	29 43 56.7	9.615	12
809	B. F. 521. Pers. β^2	6.7	5 50.58	4.489	6	39 33 18.8	9.577	6
810	7	5 54.35	6.541	10	18 40 47.4	9.573	10
811	8	5 55.60	5.561	3	25 13 43.4	9.751	3
812	8	6 21.75	4.497	1	39 27 1.5	9.537	1
813	8.9	6 21.78	4.501	3	39 21 28.7	9.537	8
814	31	..	..	..	.....	6	7 8.91	4.104	6	48 39 50.8	9.476	6
815	8	7 29.98	5.778	4	23 29 53.6	9.449	4
816	8.9	7 42.94	4.501	3	39 26 59.6	9.432	3
817	42	577	33	..	..	..	53 Persei d	6	7 51.07	4.291	6	43 59 6.9	9.422	5
818	8	7 54.28	6.535	5	18 47 22.2	9.417	5
819	7.8	8 1.90	4.548	4	38 33 20.4	9.408	4
820	7.8	8 34.04	8.903	4	11 26 44.5	9.367	4
821	7	9 40.69	4.554	5	38 33 13.3	9.281	5
822	44	..	..	..	.....	7.8	10 9.72	4.501	4	39 36 36.0	9.243	4
823	8.9	10 29.09	4.502	2	39 36 38.3	9.218	2
824	46	..	..	..	.....	6	10 44.15	4.136	6	48 1 47.5	9.199	6
825	8	10 46.28	6.311	3	20 6 16.8	9.196	3
826	7	11 20.65	4.112	6	48 43 26.7	9.151	6
827	8	11 24.97	6.360	4	19 51 45.4	9.146	3
828	iii.11	..	..	.....	7	11 40.74	6.752	5	17 54 11.1	9.125	5
829	6.7	11 44.21	5.704	6	24 17 58.8	9.121	6
830	7	12 24.55	4.559	4	38 37 49.1	9.068	4
831	7.8	12 49.88	8.057	5	13 26 55.1	9.035	5
832	8	13 29.07	8.057	3	13 28 8.4	8.984	3
833	67	..	..	..	.....	7	14 5.42	5.914	5	22 48 0.0	8.937	5
834	8	14 11.80	6.341	3	20 4 56.9	8.929	3
835	8	14 39.95	7.169	4	16 16 42.2	8.892	4
836	7	16 12.80	6.656	6	18 31 22.1	8.770	6
837	..	607	84	..	..	..	1 Camelopardi	6	17 1.78	4.694	6	36 31 1.9	8.706	6
838	8.9	18 46.02	4.540	4	39 22 18.1	8.568	4
839	..	616	101	6.7	20 1.15	4.182	3	47 23 1.0	8.470	3
840	..	618	104	57 Persei m	6	4 20 4.49	+4.184	6	47 21 17.9	-8.465	6

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841	7.8	^h ₄ ^m ₂₀ ^s _{7.39}	+5.893	5	[°] ₂₃ ['] ₁₂ ["] _{16.7}	-8.461	5
842	8	20 8.93	4.542	4	39 24 38.9	8.459	4
843	7	20 24.29	4.498	5	40 17 24.5	8.439	5
844	107	..	..	..	.....	7	20 43.39	4.186	2	47 19 36.0	8.414	2
845	7	22 14.75	6.327	4	20 27 55.0	8.293	4
846	7.8	23 9.45	5.925	5	23 6 0.7	8.221	5
847	15	..	..	..	..	..	Camelopardi	8	23 19.96	4.892	4	33 45 40.6	8.206	4
848	6	23 30.08	7.807	6	14 25 48.5	8.193	6
849	8	23 32.28	4.116	2	49 19 38.0	8.190	2
850	46	626	117	..	..	..	58 Persei <i>e</i>	5	23 33.03	4.123	5	49 8 20.4	8.189	5
851	7	24 50.96	4.159	5	48 16 42.0	8.085	5
852	..	628	122	..	..	..	2 Camelopardi	5	24 56.84	4.696	6	36 54 59.2	8.078	6
853	..	629	123	..	..	..	3 Camelopardi	6	24 59.29	4.673	6	37 18 50.3	8.074	6
854	7	25 15.52	6.328	3	20 33 27.0	8.053	3
855	9	25 16.01	4.638	2	37 54 25.7	8.052	2
856	50?	..	..	i. 13	..	..	Cephei	6	25 19.05	10.654	7	9 9 27.5	8.048	7
857	7	25 37.18	4.164	5	48 9 12.4	8.024	5
858	8.9	27 5.70	5.940	2	23 8 52.5	7.905	2
859	134	..	..	..	.....	7	27 5.97	4.113	5	49 35 56.8	7.905	5
860	6.7	27 15.62	4.428	4	42 4 59.8	7.891	4
861	6.7	27 41.73	7.772	6	14 38 30.4	7.857	6
862	8	27 47.12	4.509	2	40 27 43.2	7.850	2
863	136	..	..	..	.....	7	27 49.89	6.475	4	19 50 31.5	7.846	4
864	7.8	28 10.65	4.166	5	48 14 38.0	7.818	5
865	7.8	28 37.84	6.471	1	19 53 36.0	7.782	1
866	6.7	28 57.16	4.515	6	40 24 13.5	7.756	6
867	..	644	147	..	..	..	59 Persei	6	29 27.34	4.218	12	47 0 38.6	7.715	12
868	7	29 28.16	6.567	5	19 25 9.1	7.714	5
869	7.8	30 5.64	4.647	5	38 1 58.1	7.664	5
870	6	31 37.51	6.104	6	22 11 12.4	7.540	6
871	16	649	164	..	..	109	4 Camelopardi	5.6	32 13.35	4.935	12	33 35 46.8	7.492	12
872	8	32 47.19	4.711	2	37 3 19.1	7.445	2
873	8	33 1.66	4.701	3	37 14 12.2	7.426	3
874	7.8	33 49.53	4.146	4	49 3 14.9	7.360	4
875	7	4 34 7.56	+4.317	6	44 51 58.4	-7.336	6

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876	6.7	^h 4 ^m 34 ^s 9.29	+6.127	6	22° 7' 19.9"	-7.334	6
877	8.9	34 11.72	4.928	2	33 46 47.3	7.330	2
878	170	5.6	34 22.31	5.527	6	26 50 14.2	7.316	5
879	8	35 3.60	4.927	3	33 49 6.2	7.260	3
880	17	..	176	v. 10	188	..	Camelopardi	4	35 14.86	5.867	4	23 59 58.8	7.245	9
881	8.9	36 20.91	4.925	3	33 55 0.6	7.155	3
882	184	..	..	..	.....	6	36 54.03	4.475	5	41 36 5.4	7.110	5
883	8	37 14.75	4.693	3	37 34 47.8	7.082	3
884	7	37 46.51	4.342	6	44 28 39.1	7.038	6
885	7	38 10.53	4.700	5	37 29 42.4	7.006	5
886	191	iii. 12	..	..	.....	6	38 23.59	7.422	6	16 2 57.9	6.988	6
887	7	38 29.39	4.347	6	44 23 42.6	6.980	6
888	8	38 45.78	6.297	3	21 12 42.1	6.957	3
889	6.7	39 23.87	4.208	5	47 44 54.4	6.905	5
890	204	iii. 13	..	..	.....	6	40 41.84	7.301	6	16 32 34.0	6.798	6
891	18?	..	207	iii. 14	..	..	Camelopardi	6	40 52.06	7.385	6	16 14 17.4	6.784	6
892	6.7	41 5.96	4.710	6	37 27 17.6	6.765	6
893	..	665	212	..	..	..	6 Camelopardi	6	41 11.54	4.899	6	34 29 49.1	6.757	6
894	7	41 14.36	4.272	4	46 15 46.4	6.753	4
895	8.9	41 16.60	8.246	2	13 39 35.6	6.750	2
896	7.8	41 45.54	6.324	4	21 8 42.0	6.711	4
897	20	669	217	..	193	..	7 Camelopardi	5	42 5.46	4.766	6	36 34 3.4	6.684	14
898	7.8	42 31.23	4.550	4	40 23 26.3	6.648	4
899	218	..	..	..	.....	7.8	42 40.66	7.405	2	16 12 17.7	6.635	2
900	8.9	42 56.88	8.256	2	13 39 53.2	6.613	2
901	..	674	233	..	..	..	8 Camelopardi	6.7	44 40.19	4.737	6	37 9 7.4	6.471	6
902	8.9	44 47.81	6.378	2	20 54 59.0	6.460	2
903	9	44 52.93	6.374	1	20 56 39.6	6.453	1
904	7.8	45 52.27	6.315	3	21 19 6.8	6.371	3
905	3 Aurigæ	681	244	..	199	..	10 Camelop.	4.5	46 33.96	5.278	6	29 51 11.4	6.313	9
906	..	687	251	..	..	..	5 Aurigæ	6	47 15.88	4.100	6	50 54 24.5	6.255	6
907	..	688	252	..	..	..	6 Aurigæ	6	47 18.68	4.109	6	50 38 47.8	6.251	6
908	253	..	..	..	.....	7	48 0.61	8.243	5	13 47 43.5	6.193	5
909	8	48 6.84	5.148	1	31 25 40.0	6.185	1
910	7	690	256	..	200	116	7 Aurigæ	4	4 48 21.35	+4.276	7	46 28 ^{18.7} 18.8	-6.165	35 43

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911	18?	..	254	iii. 15	Camelopardi	6	^h 4 ^m 48 ^s 32.53	+7.410	12	16° 19' 25".2	-6".149	12
912	8	693	262	..	201	..	8 Aurigæ ζ	4	49 13.11	4.166	6	49 12 55.1	6.093	11
913	6	691	263	..	..	..	11 Camelop.	5	49 40.18	5.162	11	31 18 37.4	6.056	13
914	Aurigæ ..	692	264	..	..	..	12 Camelop.	5	49 42.83	5.167	7	31 15 34.5	6.053	7
915	..	..	..	..	..	..	.....	6.7	50 0.10	4.182	5	48 50 47.6	6.028	5
916	..	..	..	..	..	..	.....	7.8	50 21.53	4.365	3	44 30 11.7	5.998	3
917	..	..	..	..	..	..	.....	8	51 20.24	4.577	3	40 13 59.8	5.916	3
918	..	..	..	..	..	..	.....	7.8	51 23.05	4.420	4	43 21 52.1	5.912	4
919	19	..	269	ii. 15	..	..	Camelopardi	5	51 29.89	9.627	6	11 1 12.2	5.902	6
920	..	..	..	..	..	..	.....	8	51 41.01	4.573	3	40 18 56.6	5.887	3
921	9	696	273	..	..	117	9 Aurigæ	5.6	51 49.63	4.664	6	38 40 12.6	5.875	6
922	..	..	..	..	..	..	.....	7.8	52 9.40	4.674	3	38 34 10.3	5.847	3
923	..	..	..	..	..	..	.....	8.9	52 13.54	4.574	2	40 20 2.3	5.842	2
924	..	..	..	..	..	..	.....	7.8	53 2.77	7.620	4	15 42 45.0	5.773	4
925	10	700	283	..	205	..	10 Aurigæ η	4	53 12.17	4.179	5	49 2 9.5 } 9.7 }	5.760	27 } 32 }
926	..	..	284	..	..	..	.....	6.7	53 16.56	4.258	5	47 5 54.9	5.754	5
927	..	..	..	..	..	..	B. F. 649	7.8	54 50.37	4.798	4	36 33 9.7	5.621	4
928	..	..	..	..	..	..	.....	6	54 53.59	7.270	6	16.58 29.0	5.618	6
929	..	..	..	..	..	..	.....	6	54 53.69	4.712	3	37 57 52.5	5.618	3
930	..	703	292	..	..	..	14 Camelop.	6	55 53.01	5.529	6	27 33 43.4	5.535	6
931	..	..	..	..	..	..	.....	6	56 26.66	9.213	6	11 48 33.6	5.488	6
932	..	..	294	..	..	..	.....	6.7	56 35.29	4.432	7	43 17 15.2	5.476	7
933	..	..	..	..	..	..	.....	7.8	56 40.61	4.786	4	36 48 9.5	5.467	4
934	..	..	301	..	..	..	.....	8.9	57 35.49	4.433	3	43 18 39.3	5.391	3
935	..	..	..	..	..	..	.....	8.9	58 35.33	4.235	2	47 51 1.1	5.307	2
936	..	..	..	..	..	..	.....	8.9	59 2.30	4.432	3	43 23 17.9	5.269	3
937	..	..	311	..	..	..	.....	6	59 11.40	9.185	6	11 54 23.0	5.256	6
938	..	..	315	..	..	..	.....	6.7	59 31.02	4.778	5	37 1 40.4	5.227	5
939	..	..	..	..	..	..	.....	8	4 59 42.06	4.439	4	43 15 59.8	5.213	4
940	11	719	324	..	213	..	11 Aurigæ μ	5	5 0 26.37	4.086	6	51 45 15.1	5.151	6
941	..	..	..	..	..	..	.....	8.9	1 11.75	4.239	2	47 49 10.0	5.087	2
942	..	..	..	..	..	..	.....	8.9	1 32.58	4.242	2	47 45 36.2	5.057	2
943	..	..	..	..	..	..	.....	8.9	2 2.15	4.244	2	47 42 15.6	5.017	2
944	6	2 18.76	18.016	5	4 56 54.5	4.992	6
945	..	721	5	12 Aurigæ	6	5 2 23.88	+4.417	6	43 48 56.3	-4.985	5

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946	12	722	6	..	214	120	13 Aurigæ α	1	^h 5 ^m 2 ^s 40.20	+4.369	..	[°] 44 ['] 12 ^{''} 34.4 } 35.3 }	-4.962	47 } 75 }
947	8.9	2 40.78	4.256	2	47 28 29.6	4.961	2
948	7.8	2 59.73	7.691	5	15 39 0.3	4.934	5
949	8.9	3 2.10	4.253	2	47 33 47.5	4.931	2
950	8	..	..	..	15 Camelop.	7	3 6.20	5.133	6	32 6 15.3	4.926	6
951	8.9	3 21.79	4.253	2	47 33 0.3	4.903	2
952	7.8	4 3.37	7.623	5	15 53 32.4	4.844	5
953	7	4 42.42	4.260	6	47 25 42.4	4.789	6
954	16	731	22	..	222	122	15 Aurigæ λ	5	5 47.10	4.155	5	50 5 2.2	4.697	5
955	7	6 15.51	4.332	5	45 47 19.5	4.657	5
956	7	6 21.23	18.471	5	4 49 26.6	4.649	6
957	6.7	6 29.85	4.450	5	43 14 54.7	4.637	5
958	14	735	28	..	..	..	16 Camelop.	6	7 13.08	5.097	6	32 39 26.8	4.575	6
959	^{Aurigæ} 19	740	39	..	..	..	20 Aurigæ ϵ	6	8 22.30	4.224	6	48 23 58.1	4.477	6
960	9	12 2.78	4.828	2	36 35 36.4	4.164	2
961	..	745	57	..	..	..	17 Camelop.	5.6	12 15.39	5.621	6	27 6 38.4	4.146	6
962	7.8	12 20.43	7.677	5	15 50 18.0	4.139	5
963	6.7	13 31.49	4.524	5	41 57 6.8	4.037	5
964	7	13 33.83	4.532	5	41 47 55.4	4.034	5
965	7.8	13 59.57	4.297	4	46 48 41.9	3.997	4
966	230	..	.....	5	14 23.25	7.919	6	15 6 31.9	3.963	6
967	7	14 33.36	4.822	5	36 44 32.0	3.949	5
968	8.9	15 27.91	4.808	2	37 0 24.2	3.871	2
969	7	15 29.38	4.253	5	47 54 4.1	3.869	5
970	8.9	15 32.78	7.673	3	15 53 20.7	3.864	3
971	8.9	15 52.16	4.821	3	36 49 2.5	3.836	3
972	7	16 13.09	4.695	5	38 52 56.8	3.806	5
973	..	759	85	..	..	125	18 Camelop.	6	16 18.52	5.093	6	32 55 49.8	3.799	6
974	7	16 59.77	4.682	5	39 8 4.9	3.740	5
975	7	17 1.35	4.693	4	38 55 30.9	3.737	4
976	8	17 25.66	4.157	2	50 20 8.6	3.702	2
977	7	17 32.47	4.157	4	50 20 13.1	3.693	4
978	7.8	17 44.87	4.592	5	40 45 56.3	3.675	5
979	8	17 48.82	4.165	2	50 7 52.6	3.669	2
980	7	5 18 24.87	+4.101	4	51 50 21.0	-3.617	4

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981	7.8	^h 5 ^m 18 ^s 41.93	+7.608	4	16° 8' 56".7	—3".593	4
982	..	770	103	v.11	19 Camelop.	6	18 53.19	5.765	6	25 59 18.5	3.577	6
983	7	19 58.34	4.251	6	48 2 37.9	3.484	6
984	117	..	..	..	.....	6.7	21 0.29	4.900	6	35 42 52.2	3.395	6
985	..	777	120	..	..	..	20 Camelop.	7	21 23.66	5.047	6	33 39 9.0	3.361	6
986	7	21 24.76	7.817	5	15 30 4.3	3.360	5
987	6	21 55.79	4.510	6	42 25 33.1	3.315	6
988	..	782	128	..	..	..	21 Camelop.	6.7	22 53.46	5.530	6	28 10 54.4	3.230	6
989	..	785	129	..	..	..	22 Camelop.	6.7	23 2.94	5.040	7	33 45 57.4	3.218	6
990	7	23 23.66	4.715	4	38 41 38.5	3.188	4
991	6.7	23 36.45	4.177	6	49 57 14.6	3.170	6
992	8	23 51.36	4.107	4	51 47 33.6	3.149	4
993	8	24 14.36	8.213	4	14 23 19.5	3.115	4
994	7	24 18.81	4.602	5	40 42 51.2	3.109	5
995	146	..	..	..	.....	6	25 56.15	4.849	6	36 36 45.5	2.969	6
996	8.9	26 10.69	4.117	1	51 34 35.5	2.948	1
997	9	26 21.49	4.115	1	51 37 4.0	2.932	1
998	7	26 21.80	4.309	6	46 47 48.4	2.932	6
999	..	795	153	..	..	..	23 Camelop.	6	26 41.07	5.489	6	28 38 13.0	2.904	6
1000	8.9	26 42.22	4.313	3	46 43 15.9	2.902	3
1001	8.9	26 43.15	8.284	2	14 13 21.3	2.900	2
1002	8	26 54.69	4.937	1	35 17 1.9	2.884	1
1003	..	797	161	..	..	..	24 Camelop.	6	26 55.49	5.063	6	33 32 6.6	2.883	6
1004	254	..	.....	7	28 5.84	26.275	7	3 15 49.6	2.782	7
1005	..	808	166	..	..	..	25 Camelop.	7.8	28 16.57	4.941	6	35 14 37.9	2.766	6
1006	8	28 29.33	4.105	3	51 55 35.3	2.748	3
1007	8	29 5.34	4.380	4	45 15 30.7	2.695	4
1008	8	29 16.92	4.106	3	51 54 49.2	2.679	3
1009	7	29 28.90	4.519	5	42 23 33.4	2.661	5
1010	7	29 44.04	4.244	5	48 24 24.1	2.639	5
1011	7.8	29 45.15	4.106	4	51 54 40.1	2.638	4
1012	9	30 28.58	4.102	1	52 1 17.5	2.575	1
1013	..	811	179	..	..	..	26 Camelop.	5.6	30 30.07	5.034	5	33 58 50.2	2.573	6
1014	8	30 32.56	4.324	2	46 32 49.6	2.570	2
1015	..	812	182	28 Camelop.	6.7	5 30 42.77	+5.096	6	33 10 20.3	—2.555	6

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1016	..	815	186	27 Aurigæ <i>o</i>	6	^h 5 ^m 31 ^s 11.28	+4.633	6	40° 16' 22".0	-2".514	6
1017	7.8	31 58.71	4.731	5	38 34 16.6	2.445	5
1018	6.7	33 38.81	4.282	5	47 33 31.2	2.300	5
1019	7	34 2.18	4.474	3	43 21 51.7	2.266	3
1020	..	821	203	..	..	..	29 Camelop.	5.6	34 22.10	5.100	6	33 9 41.6	2.237	6
1021	7	34 49.43	4.725	2	38 42 30.5	2.197	2
1022	..	825	208	..	..	..	30 Camelop.	6	35 32.65	5.270	6	31 6 31.0	2.135	6
1023	..	827	209	..	..	..	28 Aurigæ	7	35 39.31	4.161	6	50 32 43.8	2.125	6
1024	6	35 51.01	4.736	6	38 33 35.6	2.108	6
1025	27	829	213	..	..	..	29 Aurigæ <i>τ</i>	5	36 0.82	4.148	6	50 53 53.1	2.094	7
1026	7	36 49.10	4.349	4	46 3 49.3	2.024	4
1027	..	831	226	..	261	..	31 Camelop.	5	37 57.05	5.356	6	30 10 24.4	1.925	6
1028	29	840	229	..	260	..	32 Aurigæ <i>ν</i>	5	38 19.44	4.148	4	50 55 18.4	1.893	6
1029	28	838	233	..	262	..	30 Aurigæ <i>ξ</i>	5.6	38 55.51	5.015	6	34 21 15.4	1.841	6
1030	6.7	38 58.35	8.232	6	14 26 58.8	1.837	6
1031	7.8	40 49.06	7.703	4	16 1 49.7	1.676	4
1032	246	..	..	..	.....	6	41 6.74	6.202	6	23 1 31.8	1.650	6
1033	7.8	41 8.01	5.035	5	34 5 50.5	1.648	5
1034	6	41 8.66	4.757	6	38 14 51.1	1.647	6
1035	248	..	..	..	33 Camelop.	7.8	41 45.33	5.014	8	34 23 27.6	1.594	8
1036	B. F. 792	8	42 14.15	5.033	2	34 8 4.3	1.551	2
1037	6.7	42 30.20	4.238	5	48 43 29.8	1.528	5
1038	253	..	..	..	.....	6	42 37.98	6.187	6	23 8 3.9	1.517	6
1039	7.8	43 31.96	4.441	3	44 8 28.4	1.439	3
1040	32	852	262	..	268	..	33 Aurigæ <i>δ</i>	4	43 53.42	4.920	4	35 44 ^{47.1} 47.4	1.408	30 19
1041	..	851	264	..	..	..	34 Camelop.	6	43 55.16	4.992	6	34 42 42.3	1.405	6
1042	8.9	44 0.24	4.404	2	44 55 52.5	1.398	2
1043	..	854	..	..	..	..	B. F. 799	6	44 7.59	4.938	5	35 29 15.5	1.387	5
1044	8	44 23.55	4.927	4	35 38 33.9	1.365	4
1045	7	44 23.26	5.112	2	33 6 38.4	1.364	2
1046	7	44 36.38	4.651	5	40 6 44.0	1.345	5
1047	8	44 54.13	4.439	3	44 10 23.4	1.320	3
1048	6.7	45 11.50	4.718	5	38 57 4.3	1.294	5
1049	7.8	45 13.86	6.199	1	23 4 41.2	1.291	1
1050	35	859	269	..	270	138	34 Aurigæ <i>β</i>	2	5 45 35.86	+4.398	3	45 5 ^{14.1} 11.7	-1.259	20 35

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1051	34	..	271	..	271	..	35 Aurigæ π	5.6	^h 5 ^m 45 ^s 50.12	+4.445	11	44° 5' 44".0	-1".239	11
1052	8.9	45 51.92	4.655	5	40 3 4.9	1.236	5
1053	8	45 55.52	4.718	2	38 56 27.3	1.231	2
1054	8.9	46 8.32	4.401	2	45 2 30.4	1.212	2
1055	139	B. F. 808	7	46 25.58	4.382	5	45 26 11.4	1.186	5
1056	275	..	..	..	36 Aurigæ	6	46 33.69	4.543	6	42 7 33.4	1.175	6
1057	6.7	46 49.11	5.122	6	33 0 8.6	1.152	6
1058	8.9	47 18.56	4.408	2	44 51 54.1	1.109	2
1059	8	47 39.13	8.634	3	13 29 18.7	1.079	3
1060	280	..	..	..	.....	6.7	48 2.75	4.652	5	40 6 46.7	1.045	5
1061	7	48 20.92	4.539	5	42 12 56.8	1.019	5
1062	7	48 27.87	5.738	5	26 33 28.3	1.008	5
1063	9	48 32.36	5.730	1	26 37 22.8	1.002	1
1064	7	48 42.50	4.549	4	42 1 35.5	0.987	4
1065	..	865?	..	..	..	..	.....	6.7	49 9.55	4.329	5	46 38 18.2	0.948	5
1066	..	864	291	..	..	..	35 Camelop.	5	49 24.90	4.750	4	38 26 18.8	0.925	6
1067	38	868	293	..	..	141	38 Aurigæ	6.7	49 36.00	4.309	7	47 5 50.1	0.909	6
1068	7.8	50 30.63	4.430	4	44 25 20.7	0.830	4
1069	7	50 37.09	4.369	4	45 44 35.2	0.820	4
1070	8.9	51 2.56	4.426	3	44 31 13.8	0.783	3
1071	..	873	298	..	..	..	39 Aurigæ	6.7	51 23.26	4.312	5	47 1 7.6	0.754	5
1072	7.8	51 24.22	4.564	4	41 45 24.1	0.752	4
1073	8	53 10.69	4.693	4	39 24 37.2	0.597	4
1074	..	876	310	..	..	..	37 Camelop.	5	53 12.93	5.286	8	31 3 30.3	0.593	8
1075	..	882	..	..	..	..	40 Aurigæ	6	53 29.19	4.130	6	51 30 51.9	0.570	6
1076	21	875	314	v. 13	..	..	36 Camelop.	6	53 43.93	6.031	12	24 15 53.3	0.549	12
1077	7	53 55.41	4.265	5	48 8 27.9	0.532	5
1078	8.9	53 56.55	4.238	2	48 47 40.0	0.530	2
1079	..	879	..	..	..	..	39 Camelop.	6.7	54 2.57	5.426	6	29 31 59.4	0.521	6
1080	316	..	..	..	38 Camelop.	7	54 4.26	5.307	6	30 49 5.7	0.519	6
1081	7.8	54 16.33	4.430	7	44 26 20.5	0.501	7
1082	8	54 47.63	7.434	3	17 0 50.3	0.454	3
1083	7	54 58.43	4.232	4	48 56 0.2	0.439	4
1084	8.9	55 16.61	5.129	2	32 57 16.9	0.413	2
1085	v. 14	8.9	5 55 53.13	+6.098	2	23 47 43.9	-0.360	2

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1086	7·8	^h 5 ^m 55 ^s 57·45	+ 4·489	5	43° 13' 34"·8	—0"·354	5
1087	8	55 57·83	4·539	3	42 14 45·3	0·353	3
1088	8	56 0·57	4·532	3	42 22 50·7	0·349	3
1089	8	56 4·24	4·240	1	48 44 33·0	0·344	1
1090	7·8	56 17·50	6·094	3	23 49 27·4	0·324	3
1091	8·9	56 26·76	6·092	2	23 50 7·7	0·311	2
1092	8	56 35·60	4·527	3	42 28 32·9	0·297	3
1093	7	56 51·19	4·548	5	42 4 23·0	0·275	5
1094	..	886	333 334	..	..	..	41 Aurigæ	6	57 3·07	4·591	6	41 15 57·8	0·258	6
1095	7	57 10·88	5·315	3	30 44 17·7	0·246	3
1096	7·8	57 15·87	4·403	4	45 1 41·3	0·239	4
1097	8	57 37·11	4·240	1	48 44 47·2	0·208	1
1098	7	57 41·02	8·019	5	15 6 18·0	0·203	5
1099	8·9	57 52·05	4·407	2	44 56 25·7	0·187	2
1100	22 Camel.	..	335	..	280	..	B. F. 834	5	57 53·06	6·616	5	20 38 9·6	0·185	5
1101	8·9	58 18·60	4·408	2	44 55 35·4	0·148	2
1102	..	888	341	..	281	..	40 Camelop.	6·7	58 35·59	5·386	6	29 58 0·1	0·123	6
1103	7	58 45·88	4·730	5	38 47 43·7	0·108	5
1104	8	58 49·84	4·781	7	37 57 15·4	0·102	7
1105	343	..	..	..	.....	8	59 13·61	5·314	6	30 44 52·6	0·067	6
1106	8·9	59 22·95	4·730	2	38 48 8·5	0·054	2
1107	8	5 59 53·75	4·394	2	45 12 51·0	—0·009	2
1108	7·8	6 0 3·18	5·124	6	33 1 6·2	+0·005	6
1109	7·8	0 11·10	5·108	6	33 13 35·2	0·015	6
1110	7·8	0 13·18	4·260	4	48 16 14·2	0 019	4
1111	1	893	351	..	283	..	1 Lyncis	5	0 22·77	5·535	6	28 26 33·0	0·033	6
1112	8·9	0 27·44	4·250	2	48 29 54·5	0·040	2
1113	8·9	0 45·60	4·387	1	45 22 47·2	0·066	1
1114	8	0 47·78	8·462	3	13 54 54·8	0·069	3
1115	8	0 53·95	4·792	7	37 46 30·2	0·078	7
1116	8	1 5·77	4·178	2	50 17 20·2	0·095	2
1117	8·9	1 19·24	4·262	3	48 12 33·2	0·115	3
1118	6·7	1 34·54	9·982	6	10 56 22·4	0·138	6
1119	i. 14	303	6	1 41·13	85·043	6	0 56 1·9	0·149	9
1120	8·9	6 1 50·78	+ 5·100	2	33 19 38·0	+0·163	2

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1121	10	7.8	^h 6 ^m 2 ^s 6.95	+ 5.347	4	30° 23' 21".0	+ 0".185	4
1122	8	2 39.08	4.888	3	36 16 49.7	0.232	3
1123	2	902	16	..	287	..	2 Lyncis	4	2 51.06	5.297	4	30 56 18.5 17.0	0.249	19 5
1124	7	3 3.17	5.093	10	33 25 12.6	0.267	10
1125	..	905	19	..	..	..	42 Aurigæ	6	3 24.56	4.475	6	43 31 41.0	0.298	6
1126	7	3 26.76	9.494	5	11 44 46.8	0.301	5
1127	8	3 27.11	5.072	4	33 41 19.3	0.302	4
1128	..	908	25	..	..	..	43 Aurigæ	6	4 6.47	4.472	6	43 34 51.5	0.359	6
1129	..	906	27	..	..	..	3 Lyncis	6	4 30.89	5.563	6	28 10 21.7	0.395	6
1130	7	4 32.11	4.170	5	50 28 27.9	0.396	5
1131	7	4 45.14	4.523	4	42 32 56.6	0.415	4
1132	..	910	31	..	..	..	4 Lyncis	6.7	5 11.40	5.330	6	30 33 52.8	0.453	6
1133	7	5 40.12	4.791	10	37 47 22.4	0.496	10
1134	..	915	40	..	..	..	45 Aurigæ	6	6 19.70	4.875	7	36 28 43.9	0.554	7
1135	7.8	6 37.94	4.130	4	51 30 10.6	0.580	4
1136	7.8	6 52.33	5.129	5	32 57 3.2	0.601	5
1137	7.8	7 3.65	9.369	5	11 58 21.3	0.617	5
1138	42	ii. 17	..	..	.....	7	7 28.19	10.424	12	10 17 28.1	0.652	12
1139	7.8	7 41.94	4.436	4	44 19 13.1	0.674	4
1140	7	7 42.85	4.288	6	47 35 27.3	0.675	6
1141	51	..	21	i. 15	295	..	Cephei	5	7 58.61	31.113	9	2 43 32.7	0.698	11
1142	7.8	8 11.93	4.363	5	45 52 13.4	0.717	5
1143	55	..	..	..	B. F. 872	7.8	9 1.65	5.248	5	31 29 21.5	0.789	5
1144	57	..	..	..	B. F. 873	7.8	9 19.95	5.263	6	31 19 1.2	0.816	6
1145	61	..	..	..	.....	8	10 0.43	5.247	2	31 29 42.3	0.874	2
1146	3	925	63	..	..	..	5 Lyncis	5.6	10 12.85	5.247	7	31 29 47.5	0.893	6
1147	..	926	66	..	290	..	46 Aurigæ	5	10 15.16	4.624	6	40 37 53.0	0.896	6
1148	7.8	10 17.82	4.212	5	49 23 59.6	0.900	5
1149	B. F. 879	7	10 22.97	5.075	5	33 37 51.5	0.908	5
1150	7.8	10 31.24	4.224	4	49 6 41.7	0.920	4
1151	6	10 50.65	9.410	6	11 53 8.9	0.948	6
1152	7.8	11 1.58	4.339	4	46 22 3.0	0.964	4
1153	8	11 15.20	4.480	3	43 22 54.1	0.984	3
1154	8	11 32.35	4.226	2	49 3 42.1	1.009	2
1155	8.9	6 12 5.83	+ 4.816	2	37 21 25.0	+ 1.057	2

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1156	7	^h 6 ^m 12 ^s 50.04	+ 4.271	4	[°] 47 ['] 56 ["] 58.9	+ 1.123	4
1157	8	13 3.98	4.205	2	49 33 1.0	1.142	2
1158	7	13 31.73	4.524	4	42 30 0.4	1.183	4
1159	23	..	75	ii. 18	..	..	Camelopardi	6	13 35.36	10.434	12	10 15 54.4	1.187	12
1160	83	..	..	..	.....	7	13 36.96	4.809	6	37 27 19.6	1.190	6
1161	7	13 46.75	4.789	6	37 46 29.3	1.205	6
1162	8.9	13 52.08	4.199	2	49 41 27.8	1.212	2
1163	..	930	90	..	..	145	6 Lyncis	6	14 15.94	5.226	6	31 42 55.5	1.247	6
1164	8.9	14 33.89	4.471	4	43 32 49.5	1.273	4
1165	8.9	15 36.72	4.196	2	49 46 34.1	1.364	2
1166	..	935	96	..	..	..	47 Aurigæ	7	15 50.99	4.487	11	43 12 32.6	1.384	11
1167	7.8	16 40.75	4.357	1	45 57 7.6	1.457	1
1168	8	16 57.72	4.355	4	46 0 30.4	1.484	4
1169	103	..	..	..	.....	7	16 58.51	4.248	5	48 29 16.4	1.483	5
1170	8.9	17 55.81	4.347	1	46 10 12.0	1.566	1
1171	7.8	18 35.35	4.378	3	45 28 3.6	1.624	3
1172	115	..	..	..	<i>7 Lyncis</i>	6.7	18 42.99	5.004	6	34 31 26.3	1.635	6
1173	7.8	18 44.68	4.809	4	37 24 46.5	1.638	4
1174	7.8	18 59.91	4.476	5	43 24 13.4	1.660	5
1175	8	19 1.96	4.481	4	43 18 13.5	1.663	4
1176	7.8	19 6.84	5.210	3	31 53 8.2	1.670	3
1177	7.8	19 12.75	5.015	2	34 22 25.1	1.678	2
1178	B. F. 897	7	19 42.20	5.220	5	31 45 13.5	1.721	5
1179	..	947	123	..	..	..	9 Lyncis	6.7	19 59.10	5.081	11	33 28 53.4	1.746	11
1180	..	946	125	..	..	146	8 Lyncis	6	20 17.42	5.533	6	28 22 14.1	1.772	6
1181	7	20 29.71	4.168	5	50 25 36.9	1.790	5
1182	..	949	132	..	..	..	10 Lyncis	6.7	21 7.23	5.530	6	28 23 1.4	1.844	6
1183	7	21 17.43	4.115	5	51 47 44.3	1.859	5
1184	..	951	133	..	..	..	11 Lyncis	6	21 27.97	5.117	5	23 0 24.3	1.875	5
1185	8	21 36.65	4.133	4	51 19 47.3	1.887	4
1186	137	..	..	..	.....	7.8	21 51.60	5.003	2	34 30 12.7	1.909	2
1187	7	22 9.57	4.345	4	46 9 32.3	1.935	4
1188	..	954	141	41 Camelop.	6.7	22 55.13	5.576	6	27 55 55.8	2.001	6
1189	7	23 14.61	5.215	4	31 45 29.8	2.029	4
1190	6	6 23 28.59	+ 4.129	6	51 24 54.7	+ 2.049	6

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1191	9	^h 6 ^m 24 ^s 12.44	+4.128	1	51° 25' 42".9	+2.113	1
1192	8	24 36.44	4.372	3	45 32 27.9	2.148	3
1193	7	24 36.88	5.117	5	32 57 52.5	2.148	5
1194	7	25 0.34	5.057	5	33 44 51.7	2.182	5
1195	7	25 13.13	4.253	4	48 16 19.1	2.201	4
1196	..	963	161	..	..	..	51 Aurigæ	5	25 28.91	4.164	5	50 27 21.1	2.224	6
1197	7.8	25 31.81	4.249	3	48 21 22.7	2.228	3
1198	..	964	162	..	..	..	52 Aurigæ	5	25 34.45	4.184	5	49 56 54.8	2.232	6
1199	40	965	163	..	..	..	50 Aurigæ	5	25 44.82	4.291	6	47 21 30.6	2.247	6
1200	6.7	26 7.73	5.688	6	26 52 27.6	2.280	6
1201	7	26 10.31	4.358	4	45 50 1.3	2.284	4
1202	7	26 22.65	4.372	5	45 30 44.9	2.302	5
1203	7	26 45.37	5.100	5	33 8 47.6	2.335	5
1204	..	968	174	..	..	..	B. F. 922	7	28 1.53	5.330	5	30 23 1.0	2.445	5
1205	176	..	..	..	.....	7	28 14.19	5.118	5	32 53 52.4	2.464	5
1206	..	973	183	..	304	..	55 Aurigæ	5	29 14.38	4.379	9	45 18 28.3	2.551	9
1207	9	29 19.23	4.149	2	50 48 2.2	2.558	2
1208	..	971	184 185	..	..	..	12 Lyncis	5.6	29 25.13	5.328	6	30 23 2.0	2.566	6
1209	7.8	29 27.92	4.144	2	50 56 15.9	2.570	2
1210	7	29 29.56	5.695	4	26 46 0.9	2.572	4
1211	7.8	29 46.62	4.375	1	45 24 31.0	2.597	1
1212	..	976	192	..	..	..	13 Lyncis	6	30 35.85	5.135	6	32 39 2.3	2.668	6
1213	7	30 55.67	4.377	4	45 19 13.0	2.697	4
1214	7.8	30 58.14	4.211	5	49 11 45.0	2.700	5
1215	26	974	194	iv.11	306	..	42 Camelop.	4	31 4.57	6.306	6	22 14 22.3	2.710	6
1216	8	31 37.84	4.365	1	45 34 44.7	2.758	1
1217	24	..	201	ii. 19	309	..	Camelopardi	5	32 9.94	8.887	6	12 48 38.4	2.804	6
1218	..	985	209	..	..	147	56 Aurigæ	5	33 1.68	4.334	6	46 14 53.9	2.878	6
1219	27	980	208	iv.12	310	..	43 Camelop.	4	33 8.46	6.529	5	20 54 45.1	2.888	6
1220	..	984	210	..	..	..	57 Aurigæ	5.6	33 9.28	4.588	6	41 1 30.9	2.889	6
1221	8	34 37.01	5.170	2	32 9 13.8	3.016	2
1222	..	988	222	..	..	..	14 Lyncis	5.6	36 17.49	5.322	6	30 20 38.5	3.161	6
1223	7.8	37 1.90	4.137	3	50 58 18.8	3.225	3
1224	..	992	229	58 Aurigæ	4	37 18.77	4.255	6	48 0 35.3	3.249	6
1225	8	6 37 25.85	+4.353	4	45 44 6.9	+3.259	4

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1226	7	^h 6 ^m 38 ^s 28.25	+4.738	5	38° 16' 9.9"	+3.349	5
1227	7.8	38 31.40	4.745	2	38 8 33.9	3.353	2
1228	6	39 40.25	6.900	6	18 57 33.6	3.452	6
1229	..	999	244	..	..	..	59 Aurigæ	6	39 56.20	4.137	6	50 55 5.0	3.475	6
1230	..	1000	246	..	..	..	60 Aurigæ	6	40 10.82	4.121	6	51 20 18.0	3.496	6
1231	5	998	250	..	316	150	15 Lyncis	4.5	40 47.05	5.228	4	31 20 44.7	3.548	6
1232	7	40 49.30	6.658	5	20 7 4.8	3.551	5
1233	8	40 49.91	4.216	3	48 53 17.8	3.552	3
1234	..	1005	252	..	..	..	61 Aurigæ	6	40 54.76	4.122	6	51 16 33.6	3.559	6
1235	4?	..	251	..	..	..	Lyncis	6.7	40 56.79	5.156	16	32 12 45.4	3.562	16
1236	7.8	41 10.98	4.301	5	46 49 56.0	3.583	5
1237	7	41 30.93	4.343	5	45 52 2.5	3.611	5
1238	8	41 43.92	6.623	4	20 17 22.1	3.630	4
1239	8	42 1.43	6.572	4	20 33 6.0	3.655	4
1240	255	..	..	..	.....	8	42 22.01	5.156	4	32 11 0.1	3.685	4
1241	7	42 34.40	4.099	4	51 51 29.7	3.702	4
1242	256	..	..	..	.....	7.8	42 34.90	5.158	4	32 8 26.6	3.703	4
1243	6	1006	263	..	..	..	16 Lyncis	6	43 43.93	4.395	6	44 40 24.1	3.802	6
1244	7.8	43 51.06	5.748	5	26 4 48.3	3.813	5
1245	7	44 22.13	6.873	5	19 0 58.0	3.857	5
1246	7.8	44 28.04	4.246	5	48 3 25.9	3.865	5
1247	269	..	..	..	.....	8	44 52.42	5.152	5	32 9 43.9	3.900	5
1248	7.8	45 25.58	4.100	2	51 46 20.6	3.947	2
1249	273	..	..	..	.....	6.7	45 37.13	4.946	6	34 53 48.5	3.964	6
1250	7	45 50.54	4.271	5	47 26 39.8	3.983	5
1251	..	1010	276	..	..	..	62 Aurigæ	6	46 5.13	4.102	6	51 42 1.5	4.004	5
1252	280	..	..	..	.....	7	46 54.59	5.177	5	31 49 4.7	4.074	5
1253	7.8	47 2.57	4.260	4	47 39 43.1	4.086	4
1254	7.8	47 35.70	4.946	2	34 50 55.8	4.133	2
1255	6	48 48.24	11.876	9	8 26 7.1	4.236	8
1256	293	..	..	..	B. F. 971	6	49 11.78	5.336	6	29 56 4.6	4.270	6
1257	298	..	..	..	.....	7.8	49 34.48	4.493	2	42 28 59.6	4.302	2
1258	299	..	..	..	.....	7	49 51.06	4.482	4	42 41 25.5	4.326	4
1259	25	..	292	i. 16	324	..	Camelopardi	5	50 22.39	13.300	6	7 15 51.5	4.371	6
1260	301	6	6 50 31.71	+4.800	6	36 58 23.8	+4.384	6

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1261	7.8	^h 6 ^m 50 ^s 43.04	+4.195	4	[°] 49 ['] 9 ["] 26.1	+4.400	4
1262	6.7	51 42.35	7.101	6	17 53 52.3	4.484	6
1263	7.8	51 55.33	4.481	2	42 39 20.6	4.502	2
1264	..	1022	308	..	..	..	17 Lyncis	7	52 33.00	5.423	6	28 55 36.2	4.556	6
1265	6.7	54 24.29	4.336	5	45 40 47.3	4.713	5
1266	7	54 58.23	5.567	6	27 26 41.0	4.760	6
1267	7.8	55 22.33	4.345	2	45 27 20.5	4.796	2
1268	7	55 48.51	4.984	5	34 5 44.1	4.833	5
1269	6.7	57 41.86	4.902	5	35 12 30.1	4.993	5
1270	8	58 0.46	4.167	3	49 39 27.7	5.020	3
1271	6.7	58 22.30	4.323	5	45 51 30.2	5.050	5
1272	5.6	58 32.39	4.707	6	38 16 16.1	5.064	6
1273	13	1032	338	..	328	..	63 Aurigæ	4.5	58 33.90	4.138	6	50 23 0.6	5.066	6
1274	Gemin. 7?	..	339	..	..	..	B. F. 991	8	58 48.56	5.314	3	29 55 4.7	5.087	3
1275	Lyncis.	..	..	..	..	..	.....	7.8	58 49.72	4.329	4	45 42 39.2	5.089	4
1276	7?	1031	340	..	..	152	18 Lyncis	6	59 15.79	5.302	12	30 2 30.0	5.125	12
1277	7	59 27.73	4.480	3	42 25 53.0	5.142	3
1278	334	i. 17	..	..	.....	6	6 59 30.12	11.457	6	8 45 14.2	5.146	6
1279	7	7 0 45.24	4.091	4	51 35 6.8	5.251	4
1280	7	1 38.88	4.738	6	37 38 45.4	5.327	6
1281	6	1 41.89	4.477	6	42 26 14.6	5.331	6
1282	7	1 46.64	4.389	10	44 16 37.2	5.338	10
1283	..	1037	10	..	..	..	44 Camelop.	6.7	2 8.47	5.231	6	30 45 38.4	5.369	6
1284	B. F. 1004	6	2 36.61	4.742	6	37 32 53.6	5.408	6
1285	..	1040	16	..	..	..	45 Camelop.	7	2 39.17	5.248	5	30 33 3.0	5.412	6
1286	..	1043	22	..	..	..	46 Camelop.	7	3 19.99	5.258	6	30 25 13.1	5.469	6
1287	8	4 13.49	4.373	3	44 32 42.3	5.544	3
1288	7	4 42.81	4.115	5	50 47 56.8	5.585	5
1289	..	1052	32	..	333	..	64 Aurigæ	5.6	4 48.28	4.192	6	48 47 34.3	5.593	6
1290	..	1051	36	..	..	..	47 Camelop.	6	5 34.88	5.310	6	29 45 47.3	5.658	6
1291	7.8	5 54.17	4.106	5	50 59 53.5	5.685	5
1292	..	1054	47	..	..	..	.....	8	7 17.37	4.938	2	34 22 24.2	5.801	2
1293	9	1056	48	..	336	..	19 Lyncis	6.7	7 18.99	4.938	5	34 22 35.1	5.803	5
1294	49	8	7 19.95	4.942	3	34 19 0.2	5.804	3
1295	7	7 7 30.54	+4.372	5	44 26 5.2	+5.819	5

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1296	7	^h 7 ^m 7 ^s 36.78	+4.260	4	[°] 47 ['] 0 ^{''} 15.1	+5.828	4
1297	..	1057	53	} 20 Lyncis	7	7 40.64	4.618	5	39 30 35.3	5.833	5
1298	..	1057	53	..	..	154		7	7 41.92	4.618	5	39 30 30.0	5.835	5
1299		6	8 31.18	6.032	7	23 18 48.9	5.904	7
1300	7	9 5.60	6.052	6	23 9 0.3	5.952	6
1301	7	9 13.82	4.114	5	50 39 31.9	5.963	5
1302	8	9 18.15	4.258	3	46 59 26.7	5.969	3
1303	..	1063	60	..	..	..	65 Aurigæ	5	9 19.65	4.033	6	52 53 42.4	5.971	6
1304	6.7	10 34.79	6.926	6	18 16 4.9	6.076	6
1305	8	10 36.76	4.947	4	34 7 39.0	6.079	4
1306	8.9	10 52.04	4.279	3	46 25 22.0	6.100	3
1307	18	1064	70	..	..	..	66 Aurigæ	5	10 57.36	4.176	6	48 58 31.0	6.107	6
1308	Gemin. 1	..	67	iv.13	340	..	Ursæ Majoris	5	10 58.88	6.355	6	21 9 59.3	6.109	7
1309	10	1066	79	..	..	..	21 Lyncis	5.6	12 20.56	4.559	6	40 25 33.3	6.222	6
1310	7	12 30.15	6.969	6	18 1 49.7	6.235	6
1311	8.9	12 52.94	4.499	2	41 34 56.3	6.267	2
1312	7.8	13 6.76	4.330	4	45 9 26.4	6.286	4
1313	87	..	..	..	.....	7	13 28.93	4.277	5	46 22 41.3	6.317	5
1314	7.8	13 33.95	8.224	5	13 49 3.6	6.324	5
1315	8.9	14 10.73	4.497	1	41 34 17.7	6.375	1
1316	7.8	14 35.25	4.489	4	41 42 23.6	6.409	4
1317	7.8	14 38.30	4.095	5	50 57 55.6	6.413	5
1318	92	..	..	..	.....	7	14 39.84	4.502	5	41 26 38.9	6.415	5
1319	6.7	14 53.24	5.463	5	27 51 32.4	6.433	5
1320	..	1073	95	..	..	..	22 Lyncis	6	15 27.99	4.578	6	39 56 59.2	6.482	6
1321	8	16 25.98	6.008	1	23 14 38.7	6.562	1
1322	8	17 5.47	4.083	1	51 10 48.9	6.616	1
1323	7	17 6.88	8.118	6	14 1 37.6	6.618	6
1324	7	17 13.82	6.019	5	23 8 19.2	6.628	5
1325	7.8	17 18.50	4.071	4	51 26 55.1	6.634	4
1326	7	19 0.21	4.097	5	50 43 2.6	6.773	5
1327	7.8	19 9.72	6.472	3	20 16 20.8	6.780	3
1328	6.7	19 45.96	5.976	6	23 21 42.3	6.836	6
1329	8	20 44.05	10.944	1	9 2 51.5	6.916	1
1330	7	7 21 15.51	+4.937	5	33 50 32.1	+6.959	5

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1331	8	^h 7 ^m 22 ^s 8.15	+4.806	4	35° 45' 10.2	+7.031	4
1332	7	22 31.65	4.252	5	46 33 52.1	7.063	5
1333	8	22 56.53	4.894	4	34 23 0.7	7.098	4
1334	6.7	23 7.27	6.456	6	20 14 30.4	7.112	6
1335	..	1086	133	..	..	..	48 Camelop.	6.7	23 32.94	5.228	6	30 1 27.6	7.146	6
1336	7.8	24 5.63	4.805	4	35 40 58.8	7.191	4
1337	8	24 15.01	7.541	4	15 34 38.3	7.203	4
1338	7	24 15.96	4.131	5	49 33 50.7	7.205	5
1339	132	i. 19	..	..	.....	6	24 17.77	10.692	6	9 17 20.5	7.207	6
1340	7.8	24 41.22	5.829	2	24 17 17.3	7.239	2
1341	..	1093	140	..	..	..	23 Lyncis	6	25 2.41	5.023	6	32 29 57.5	7.268	6
1342	7	25 9.04	7.552	5	15 31 10.7	7.277	5
1343	8	25 17.93	4.064	8	51 19 41.2	7.289	8
1344	7.8	25 40.98	10.104	2	10 1 40.1	7.321	2
1345	7.8	25 47.85	5.844	2	24 8 5.9	7.329	2
1346	8	25 56.31	4.066	6	51 15 1.5	7.341	6
1347	8.9	25 59.78	4.855	1	34 49 21.2	7.346	1
1348	6	26 31.73	4.855	10	34 48 41.3	7.389	10
1349	11	1096	151	..	..	..	24 Lyncis	5	26 51.84	5.146	7	30 51 37.9	7.417	7
1350	6.7	27 6.11	6.404	5	20 24 23.0	7.436	5
1351	156	..	..	..	.....	7	27 7.82	4.474	5	41 26 19.0	7.438	5
1352	6.7	27 25.99	4.064	13	51 14 1.2	7.462	13
1353	159	..	..	..	.....	7	27 43.50	5.800	3	24 24 32.0	7.487	3
1354	160	..	..	..	.....	7	27 43.62	5.800	3	24 24 17.4	7.487	3
1355	28?	..	155	..	..	..	Camelopardi	6.7	28 4.96	10.336	10	9 40 27.0	7.516	8
1356	..	1098	164	v. 16	..	..	51 Camelop.	6	28 23.71	5.835	6	24 6 29.7	7.541	6
1357	..	1100	167	..	..	..	49 Camelop.	5.6	29 9.32	5.524	6	26 43 42.7	7.602	6
1358	..	1104	169	..	..	..	50 Camelop.	5.6	29 38.12	4.587	6	39 7 49.1	7.641	6
1359	6	29 50.28	16.041	5	5 26 15.9	7.658	7
1360	9	29 59.78	8.920	2	11 54 51.0	7.671	2
1361	7	30 19.01	8.895	5	11 57 31.7	7.697	5
1362	171	..	..	..	.....	7.8	30 21.44	4.269	4	45 46 10.2	7.700	4
1363	7	31 7.84	6.915	3	17 45 28.1	7.762	3
1364	7.8	31 27.13	5.267	4	29 15 14.5	7.788	4
1365	8	7 32 42.19	+8.909	4	11.52 39.6	+7.889	4

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1366	7	^h 7 ^m 33 ^s 20.53	+10 ^s 109	2	9° 53' 15.3	+7 ^u 940	2
1367	7.8	33 37.89	5.262	4	29 12 14.0	7.963	4
1368	187	ii. 22	..	..	.....	6	34 20.57	9.992	12	10 1 48.8	8.019	12
1369	7	35 5.34	6.900	5	17 40 58.3	8.081	5
1370	7	35 48.46	6.858	5	17 50 45.5	8.136	5
1371	7.8	35 48.73	5.178	5	30 1 56.9	8.137	5
1372	199	..	..	..	.....	6.7	36 4.07	4.785	7	35 24 40.8	8.158	7
1373	7	36 9.72	4.824	3	34 48 15.4	8.166	3
1374	iii. 17	..	..	.....	5.6	37 11.63	7.431	6	15 35 48.2	8.248	6
1375	216	..	..	..	.....	7.8	39 5.47	4.813	3	34 48 18.5	8.399	3
1376	8.9	39 11.09	5.191	3	29 44 43.1	8.407	3
1377	8	40 7.90	5.179	4	29 50 23.7	8.481	4
1378	..	1125	221	..	..	..	25 Lyncis	6	40 37.24	4.405	6	42 8 8.5	8.520	6
1379	..	1126	222	..	357	..	26 Lyncis	5	40 49.95	4.413	6	41 57 21.1	8.537	5
1380	..	1123	223	..	..	..	52 Camelop.	5	40 58.24	4.929	6	33 0 39.0	8.548	6
1381	8	41 24.53	4.255	1	45 30 9.8	8.582	1
1382	7	41 31.06	4.253	4	45 31 34.0	8.591	4
1383	236	..	..	..	.....	7	42 39.10	5.680	5	24 45 22.7	8.681	5
1384	6	44 53.50	4.245	6	45 31 40.6	8.858	6
1385	7	45 20.10	5.105	5	30 27 6.3	8.892	5
1386	6.7	45 22.47	5.480	6	26 24 15.7	8.895	6
1387	..	1135	248	..	..	..	53 Camelop.	6	45 22.87	5.213	6	29 10 17.2	8.896	6
1388	8	45 29.15	5.480	5	26 24 10.0	8.904	5
1389	2	..	251	..	..	..	Ursæ Majoris	6	45 45.38	5.271	4	28 30 11.4	8.925	5
1390	6.7	46 13.74	4.773	6	35 2 2.0	8.962	6
1391	i. 21	..	..	.....	6	46 36.57	12.750	6	7 1 55.7	8.992	8
1392	54 Camelop.	6	47 2.38	4.962	5	32 12 53.6	9.027	5
1393	260	..	..	..	.....	7	47 52.06	4.747	5	35 21 29.5	9.090	5
1394	7.8	48 38.71	4.746	1	35 19 29.0	9.150	1
1395	7.8	49 23.49	6.465	2	19 15 51.5	9.209	2
1396	269	..	..	..	.....	6.7	49 33.75	4.989	6	31 42 11.2	9.222	6
1397	271	..	..	..	.....	..	49 39.19	4.827	2	33 59 46.0	9.228	2
1398	8	49 55.48	7.960	3	13 37 29.9	9.250	3
1399	7.8	50 3.51	5.102	6	30 13 47.2	9.260	6
1400	(3)	Ursæ Majoris	6.7	7 50 27.31	+6.366	11	19.45 0.6	+9.291	11

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1401	4?	..	282	Ursæ Majoris	6	^h 7 ^m 51 ^s 37.25	+5.745	6	23° 48' 17.9"	+ 9.381	6
1402	6.7	51 51.35	4.068	6	49 44 10.1	9.399	6
1403	8	52 33.10	7.901	3	13 42 14.2	9.453	3
1404	3	1148	..	iv.14	363	..	55 Camelop.	5	53 43.72	6.132	6	20 59 3.5	9.544	6
1405	U. Maj. ..	1155	293	..	..	..	28 Lyncis	6.7	53 57.62	4.194	6	46 12 23.5	9.562	6
1406	12	1154	294	..	362	..	27 Lyncis	5	54 6.24	4.573	6	37 57 32.5	9.573	6
1407	6	54 23.29	5.004	6	31 12 35.3	9.595	6
1408	..	1147	..	..	..	..	.....	6.7	55 19.06	7.876	7	13 41 6.4	9.665	7
1409	8.9	55 21.19	7.937	2	13 31 9.6	9.668	2
1410	7.8	55 23.58	5.011	4	31 4 31.3	9.671	4
1411	..	1159	..	..	..	..	.....	6	56 17.80	4.156	6	47 1 29.6	9.741	6
1412	8.9	56 46.20	7.908	3	13 32 55.6	9.777	3
1413	7	57 42.45	6.401	6	19 15 43.6	9.848	6
1414	7	57 42.78	5.777	6	23 15 50.8	9.848	6
1415	311	..	..	..	B. F. 1132	5	58 36.67	4.857	6	32 59 32.0	9.916	6
1416	6.7	58 43.58	4.017	6	50 42 56.6	9.925	6
1417	ii. 23	..	..	.....	6.7	58 58.65	7.518	6	14 36 40.6	9.944	6
1418	6	59 22.44	18.428	5	4 18 55.8	9.974	6
1419	..	1160	..	..	..	..	.....	6	59 28.96	6.854	6	17 1 20.2	9.983	6
1420	..	1164	319	..	..	..	56 Camelop.	6	7 59 43.56	5.153	6	29 3 34.1	10.001	6
1421	7	8 1 42.52	4.165	5	46 24 4.6	10.152	5
1422	5	1171	7	..	..	..	29 Lyncis	5	1 57.50	5.074	6	29 51 39.4	10.171	6
1423	U. Maj. ..	..	8	..	..	..	.....	7	2 21.26	5.932	6	21 53 49.2	10.201	6
1424	..	1172	10	..	..	..	57 Camelop.	5.6	2 38.03	5.332	6	26 55 15.8	10.221	6
1425	iv.15	..	..	.....	7	4 58.20	6.127	6	20 29 25.7	10.397	6
1426	..	1178	19	..	..	..	58 Camelop.	5	4 59.82	4.921	4	31 40 43.0	10.399	6
1427	30	..	..	..	B. F. 1159	6	6 39.68	5.138	6	28 46 54.1	10.523	6
1428	7	8 49.26	5.850	4	22 6 55.2	10.683	4
1429	40	..	..	..	.....	5	9 20.59	4.613	6	36 10 50.7	10.721	6
1430	13	1183	43	..	369	..	31 Lyncis	5	9 46.95	4.149	6	46 12 51.1	10.754	6
1431	6	10 49.82	12.070	6	7 7 12.6	10.831	6
1432	46	..	..	..	.....	6	11 40.82	5.832	6	22 5 34.0	10.894	6
1433	6	11 48.40	4.100	6	47 23 39.8	10.903	6
1434	8	11 50.31	4.099	2	47 24 52.5	10.905	2
1435	52	6.7	8 13 54.23	+6.122	5	20 3 31.6	+11.056	5

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1436	7	^h 8 ^m 14 ^s 7.48	+4.020	5	49° 29' 53".0	+11".072	5
1437	7	14 19.04	4.233	6	43 43 3.3	11.086	6
1438	6	1186	57	..	370	173	1 Ursæ Maj. <i>o</i>	4	14 22.16	5.105	6	28 39 36.3 34.9	11.090	27) 7)
1439	58	..	..	..	.....	8	15 3.63	5.806	3	22 4 54.0	11.140	3
1440	7	16 56.91	6.139	4	19 47 14.0	11.277	4
1441	71	..	..	..	.....	7.8	17 3.20	4.574	3	36 15 13.1	11.285	3
1442	7?	1195	75	v. 17	..	..	2 Ursæ Maj. <i>A</i>	5	17 26.32	5.521	6	24 13 19.0	11.313	6
1443	8	17 52.56	6.156	2	19 38 2.6	11.344	2
1444	7	18 8.22	6.149	6	19 39 47.1	11.363	6
1445	78	..	..	..	.....	6	18 13.65	4.569	6	36 15 11.9	11.369	6
1446	6	18 16.14	6.977	6	15 43 28.1	11.372	6
1447	7.8	18 26.03	4.013	4	49 19 7.4	11.384	4
1448	7.8	18 31.86	4.019	4	49 8 54.7	11.391	4
1449	7.8	18 33.07	4.915	4	30 45 38.9	11.393	4
1450	6	20 31.82	3.942	6	51 20 32.4	11.535	6
1451	7?	1202	90	v. 18	..	..	3 Ursæ Maj.	5	22 10.23	5.472	6	24 20 11.9	11.652	6
1452	8	22 21.70	9.689	5	9 19 18.1	11.666	5
1453	8	23 14.56	4.104	3	46 17 25.8	11.728	3
1454	7	23 24.30	4.086	4	46 46 33.2	11.740	4
1455	8	1206	96	v. 19	373	..	4 Ursæ Maj. <i>π</i>	5	23 27.52	5.388	6	25 1 20.3	11.743	6
1456	7	23 35.86	4.989	5	29 24 33.8	11.753	5
1457	7	23 55.73	6.178	6	19 10 34.8	11.777	5
1458	5.6	24 6.57	4.558	6	35 56 55.6	11.790	6
1459	103	..	..	..	.....	7	24 48.62	4.530	5	36 25 20.0	11.839	5
1460	105	..	..	..	.....	7	25 8.73	4.516	5	36 38 4.9	11.863	5
1461	7.8	26 16.15	4.138	4	45 6 3.7	11.942	4
1462	8	26 29.39	4.139	2	45 3 9.1	11.957	2
1463	6	26 49.55	9.622	6	9 17 4.2	11.981	5
1464	7.8	27 10.26	4.032	4	47 58 36.3	12.005	4
1465	15	1214	115	..	..	..	34 Lyncis	6	27 49.97	4.193	6	43 30 37.8	12.051	6
1466	8.9	27 54.96	4.157	4	44 26 43.0	12.057	4
1467	7	28 18.11	3.984	5	49 19 17.7	12.084	4
1468	7.8	28 42.96	4.153	5	44 28 20.4	12.113	5
1469	137	B. F. 1210	6	31 26.50	5.602	6	22 36 33.0	12.302	6
1470	7	8 32 35.76	+6.118	5	19 0 46.3	+12.381	5

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1471	7	^h 8 ^m 36 ^s 42.52	+3.908	5	50° 57' 53.8	+12.662	5
1472	9	1241	165	179	5 Ursæ Maj. <i>b</i>	5.6	37 35.25	5.066	6	27 20 22.4	12.722	6
1473	7.8	37 56.91	4.071	2	45 48 5.6	12.746	2
1474	16	1247	175	..	..	..	35 Lyncis	5.6	39 8.75	4.075	6	45 34 33.7	12.828	6
1475	7	39 28.45	6.110	5	18 37 56.3	12.850	5
1476	6.7	39 33.39	4.014	6	47 17 34.8	12.854	6
1477	..	1246	178	v. 20	..	..	6 Ursæ Maj.	5	40 10.59	5.294	6	24 40 55.2	12.897	6
1478	7 Ursæ Maj.	7.8	40 14.99	4.982	4	28 7 6.3	12.902	4
1479	9	40 50.00	4.009	2	47 18 33.3	12.941	2
1480	6	41 52.89	9.925	6	8 25 57.9	13.010	6
1481	B. F. 1237	7	41 56.39	5.430	5	23 16 50.2	13.014	5
1482	7.8	42 4.72	3.946	5	49 8 56.3	13.023	5
1483	7.8	42 10.23	4.962	4	28 11 55.0	13.029	4
1484	7	42 58.57	5.157	5	25 51 6.1	13.082	5
1485	7	43 5.34	5.151	5	25 55 33.8	13.090	5
1486	202	..	..	..	.....	5.6	43 54.60	4.126	6	43 38 59.5	13.144	6
1487	6	44 7.98	3.942	6	49 4 47.6	13.159	6
1488	7.8	44 42.35	3.976	5	47 56 28.1	13.196	5
1489	6.7	45 0.53	6.166	6	17 57 46.6	13.216	6
1490	10	1257	207	iv. 16	..	..	8 Ursæ Maj. <i>e</i>	5	45 12.65	5.598	6	21 38 35.9	13.230	6
1491	8.9	45 14.49	4.214	3	41 13 41.0	13.232	3
1492	11	1260	212	..	385	183	9 Ursæ Maj. <i>i</i>	4	46 8.60	4.210	4	41 13 18.8 } 18.6 }	13.291	13 } 59 }
1493	8.9	46 9.89	4.218	2	41 0 18.1	13.293	2
1494	8	48 15.35	4.270	2	39 31 31.0	13.429	2
1495	12	1268	223	..	..	184	10 Ursæ Maj.	4	48 15.67	3.978	5	47 28 24.2	13.430	7
1496	6	48 23.69	3.852	6	51 39 56.3	13.438	6
1497	8.9	48 53.00	4.037	3	45 35 5.8	13.471	3
1498	7	49 23.57	3.910	5	49 32 55.4	13.503	5
1499	7.8	49 25.99	4.904	5	28 16 9.3	13.506	5
1500	7	49 39.37	4.273	5	39 18 54.6	13.520	5
1501	6	49 59.83	4.477	6	34 58 40.1	13.542	6
1502	7.8	50 7.11	3.877	4	50 36 20.6	13.550	4
1503	14	1272	230	..	387	..	12 Ursæ Maj. <i>κ</i>	4	50 35.73	4.156	3	42 6 6.5 } 5.3 }	13.580	21 } 52 }
1504	7	51 21.56	3.850	6	51 24 38.6	13.630	6
1505	..	1271	232	iv. 17	11 Ursæ Maj. <i>σ</i> ¹	5	8 51 32.16	+5.447	6	22 22 33.7	+13.641	6

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1506	7	^h 8 ^m 51 ^s 36.11	+3.874	5	50° 30' 57.4	+13.642	5
1507	7.8	51 49.79	4.019	5	45 48 53.6	13.660	5
1508	..	..	..	..	..	..	.....	6	52 13.60	4.202	6	40 43 28.0	13.685	6
1509	..	..	..	..	..	..	.....	7.8	52 14.67	4.018	5	45 47 47.4	13.686	5
1510	13	1276	241	iv.18	..	186	13 Ursæ Maj. σ^2	5	53 28.97	5.460	6	22 6 23.8	13.765	6
1511	..	..	..	..	..	..	.....	7	53 40.53	4.328	5	37 37 9.4	13.777	5
1512	..	..	243	..	..	..	.....	8	53 44.88	3.859	1	50 48 40.7	13.782	1
1513	17	..	245	..	388	..	B. F. 1281	5	54 24.10	3.857	11	50 47 50.3	13.823	10
1514	..	..	..	..	..	..	.....	6	54 40.37	3.852	2	50 58 11.3	13.840	2
1515	15	1279	247	..	..	..	14 Ursæ Maj. τ	5	55 6.18	5.071	5	25 43 29.9	13.866	5
1516	16	1280	249	..	..	..	15 Ursæ Maj. f	5	55 23.59	4.318	6	37 38 17.3	13.886	6
1517	..	..	..	..	..	..	B. F. 1283	6	56 28.87	6.352	6	16 16 55.4	13.953	6
1518	..	..	..	..	..	..	B. F. 1284	8	57 31.12	4.898	3	27 33 32.4	14.019	3
1519	..	..	..	..	..	..	.....	8	57 32.97	4.899	3	27 33 6.5	14.023	3
1520	..	..	..	..	..	..	.....	8	58 39.22	3.880	3	49 26 47.1	14.090	3
1521	18	1288	261	..	..	..	16 Ursæ Maj. c	5	59 11.40	4.866	6	27 48 18.7	14.124	6
1522	..	..	..	..	..	..	.....	7.8	8 59 58.25	6.547	5	15 12 0.3	14.172	5
1523	..	..	..	..	..	..	.....	7.8	9 0 45.44	4.105	2	42 14 18.8	14.220	2
1524	17	1295	2	..	..	..	36 Lyncis	5.6	1 19.58	3.975	6	46 0 27.0	14.255	6
1525	..	1293	4	..	..	..	17 Ursæ Maj.	5	1 39.08	4.542	7	32 28 51.1	14.275	7
1526	19	1297	8	..	391	..	18 Ursæ Maj. e	5	2 25.49	4.393	6	35 12 12.4	14.323	6
1527	..	..	..	..	..	..	.....	7	2 56.58	3.834	5	50 37 3.6	14.355	5
1528	..	..	19	..	..	..	.....	6	4 42.57	4.081	6	42 23 59.0	14.462	6
1529	..	1302	23	..	..	..	20 Ursæ Maj.	7	5 49.86	4.700	5	29 25 41.1	14.530	5
1530	..	..	..	..	..	..	.....	7	6 28.69	4.078	6	42 15 58.4	14.569	6
1531	..	..	..	..	..	..	.....	7.8	6 42.79	3.908	4	47 30 41.5	14.583	4
1532	..	..	28	..	..	..	.....	7	7 3.09	4.294	5	36 45 25.7	14.603	5
1533	..	1306	31	..	..	..	37 Lyncis	6	7 27.83	4.240	6	37 56 56.7	14.628	6
1534	..	..	..	..	..	..	B. F. 1307	6	7 40.71	4.509	6	32 30 20.0	14.641	6
1535	..	..	..	..	..	..	.....	8	8 1.02	3.842	3	49 39 50.6	14.661	3
1536	..	..	..	..	..	..	.....	7.8	8 48.67	4.014	5	43 49 56.8	14.709	5
1537	1	..	37	i.23	395	..	Draconis	5	8 57.35	9.649	7	7 51 9.8	14.717	6
1538	..	..	..	..	..	..	.....	6.7	9 2.65	3.802	6	51 0 55.3	14.723	6
1539	7	9 11.93	3.841	7	49 32 8.9	14.732	7
1540	..	1310	47	39 Lyncis	6	9 9 30.65	+4.160	5	39 39 20.5	+14.749	5

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1541	6·7	^h 9 ^m 10 ^s 17·35	+4·980	6	25° 15' 7"·4	+14"·796	6
1542	6·7	11 40·34	4·230	6	37 37 11·3	14·876	6
1543	..	1315	58	..	..	..	21 Ursæ Maj.	7	12 4·80	4·337	6	35 10 32·6	14·900	6
1544	..	..	70	..	..	..	.....	7·8	14 15·94	4·072	4	41 24 51·5	15·028	4
1545	..	..	..	..	..	..	B. F. 1326	7	16 7·27	4·395	6	33 25 59·0	15·135	6
1546	22	1325	78	..	..	194	41 Lyncis	6	16 9·25	3·989	6	43 34 24·1	15·136	6
1547	U. Maj.	..	81	..	..	..	.....	8	16 11·79	3·988	1	43 35 47·5	15·139	1
1548	21	1323	82	v. 21	398	..	23 Ursæ Maj. <i>h</i>	7	16 24·46	4·853	5	26 7 1·3	15·151	7
1549	..	1322	83	iii. 18	..	..	22 Ursæ Maj.	7	16 39·80	5·933	6	16 57 46·6	15·166	6
1550	20	1324	86	iii. 19	400	..	24 Ursæ Maj. <i>d</i>	5	17 26·94	5·547	6	19 20 43·4	15·211	6
1551	..	..	..	..	..	..	.....	8	17 54·78	4·056	3	41 18 15·4	15·237	3
1552	..	..	..	..	..	..	.....	7·8	19 50·54	4·063	4	40 50 17·7	15·345	4
1553	..	..	..	..	..	..	.....	7·8	19 55·96	4·056	4	41 0 14·7	15·351	4
1554	23	1332	98	..	402	197	25 Ursæ Maj. <i>g</i>	3·4	20 4·62	4·189	4	37 27 50·8 } 52·7 }	15·360	36 } 34 }
1555	..	..	..	..	..	..	.....	7	21 29·46	4·787	6	26 22 24·5	15·438	6
1556	25	1336	104	..	..	..	26 Ursæ Maj.	5	21 43·62	4·193	6	37 6 43·1	15·452	6
1557	..	..	..	..	..	..	.....	7·8	22 16·47	5·417	3	19 52 7·0	15·482	3
1558	..	..	..	..	..	..	.....	7	22 56·96	4·411	5	32 11 29·0	15·519	5
1559	..	..	..	..	..	..	.....	7	23 10·00	4·051	5	40 40 17·1	15·531	5
1560	2	..	115	..	..	..	B. F. 1347	6·7	23 10·04	3·788	6	49 32 31·0	15·531	6
1561	..	..	112	..	..	..	.....	7	23 21·89	7·404	6	11 0 46·9	15·543	6
1562	..	..	..	..	..	..	.....	6	24 4·31	7·832	6	10 0 24·1	15·582	6
1563	24	1342	121	iii. 20	..	..	27 Ursæ Maj.	6	25 9·58	5·820	6	16 53 42·5	15·641	6
1564	..	..	..	..	..	..	B. F. 1343	6	25 45·83	5·368	7	19 54 28·7	15·674	7
1565	..	1346	126	..	..	..	42 Lyncis	6	26 27·23	3·791	5	48 54 50·5	15·712	5
1566	..	..	..	..	..	..	.....	7·8	26 47·26	4·223	4	35 38 50·2	15·730	4
1567	..	..	129	..	..	..	.....	7·8	27 3·21	3·867	5	46 0 13·6	15·745	5
1568	..	..	..	..	..	..	.....	7·8	27 30·26	4·213	4	35 47 3·5	15·770	4
1569	..	..	..	..	..	..	.....	7·8	29 34·09	3·747	5	50 11 16·2	15·880	5
1570	..	..	..	..	..	..	.....	7	29 39·92	3·869	5	45 30 23·2	15·885	5
1571	..	..	..	..	..	..	.....	7	29 49·99	4·027	5	40 21 25·7	15·894	5
1572	..	..	..	..	..	..	.....	6	29 53·08	4·240	7	34 46 37·0	15·897	7
1573	..	..	..	..	..	..	.....	7	30 9·44	4·012	5	40 42 38·1	15·911	5
1574	..	1354	143	43 Lyncis	6	30 11·31	3·764	6	49 22 59·8	15·913	6
1575	7	9 30 47·23	+4·931	4	23 30 31·8	+15·944	4

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1576	..	1355	150	v. 23	28 Ursæ Maj.	5	^h 9 ^m 31 ^s 8.95	+4.764	6	25° 28' 53".1	+15".964	6
1577	..	1364	159	44 Lyncis	5.6	32 57.87	4.348	6	32 0 27.3	16.059	6
1578	..	1367	162	..	..	..	14 Leo. Min.	6.7	34 29.77	3.888	7	44 0 35.9	16.139	7
1579	6.7	35 19.57	4.879	5	23 31 50.9	16.179	5
1580	26 U. Maj.	1369	169	..	..	206	15 Leo. Min.	6	36 16.28	3.906	6	43 6 2.3	16.231	6
1581	27	1371	174	..	411	208	29 Ursæ Maj. v	4	37 22.41	4.413	6	30 4 30.3	16.287	8
1582	..	1374	177	..	..	..	16 Leo. Min.	6	38 30.86	3.729	5	49 29 23.5	16.345	5
1583	28	1375	179	..	412	..	30 Ursæ Maj. φ	4.5	39 5.12	4.167	6	35 3 19.2	16.374	6
1584	..	1378	189	..	..	..	17 Leo. Min.	6	40 48.21	3.681	5	51 12 0.3	16.460	5
1585	6.7	41 4.07	4.500	6	27 59 46.6	16.473	5
1586	187	iii. 21	..	..	.....	6	41 5.61	5.683	6	16 13 35.2	16.475	6
1587	..	1387	199	..	..	..	31 Ursæ Maj.	5.6	43 14.13	3.986	6	39 17 24.1	16.580	6
1588	7	43 30.57	4.144	5	34 51 47.0	16.594	5
1589	8	43 42.07	3.845	3	43 55 34.4	16.603	3
1590	201	..	..	..	.....	6	43 52.64	4.280	6	31 41 5.6	16.612	5
1591	B. F. 1404	6	45 54.24	3.841	5	43 41 10.6	16.710	5
1592	1	1392	209	..	..	..	19 Leo. Min.	5	45 59.48	3.731	6	48 2 44.1	16.714	6
1593	7	46 17.72	3.978	5	38 58 31.9	16.729	5
1594	B. F. 1405	6	46 41.00	4.230	6	32 17 10.4	16.748	6
1595	7.8	48 16.77	3.751	5	46 46 40.5	16.824	5
1596	8	48 43.03	4.163	3	33 29 11.3	16.844	3
1597	226	..	..	..	.....	7	50 28.56	3.945	6	39 12 40.3	16.927	6
1598	6	50 52.39	3.950	5	38 58 49.2	16.946	5
1599	8	51 29.71	3.639	4	51 11 52.0	16.975	4
1600	7.8	51 42.34	3.728	5	47 4 50.0	16.985	5
1601	229	..	..	..	B. F. 1414	6	51 53.62	4.073	6	35 11 43.6	16.994	6
1602	8	52 1.24	4.134	3	33 35 57.4	17.000	3
1603	7	52 29.11	3.638	5	51 3 39.0	17.021	5
1604	8	53 9.34	3.977	3	37 41 36.0	17.052	3
1605	7.8	53 24.55	3.960	4	38 9 54.3	17.063	4
1606	233	..	..	..	.....	7	53 35.14	4.133	5	33 18 52.8	17.072	5
1607	236	..	..	..	.....	8	53 59.17	4.127	2	33 25 26.3	17.090	2
1608	7.8	54 26.87	3.662	5	49 29 59.3	17.112	5
1609	6.7	55 2.57	4.546	6	25 7 35.1	17.138	6
1610	8	9 55 2.99	+3.657	3	49 34 36.4	+17.139	3

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1611	8.9	^h 9 ^m 55 ^s 36.83	+3.626	3	51° 3' 23.0	+17.165	3
1612	7	55 55.70	4.523	5	25 19 25.3	17.179	5
1613	8.9	55 59.63	3.630	3	50 46 56.8	17.182	3
1614	7.8	56 49.60	3.936	4	38 15 19.6	17.219	4
1615	8	57 55.84	3.625	3	50 38 33.0	17.268	3
1616	7	58 8.34	3.888	5	39 33 53.0	17.277	5
1617	7	59 29.01	3.663	5	48 24 34.0	17.336	5
1618	6.7	59 40.14	3.878	6	39 35 24.3	17.344	6
1619	B. F. 1445	6.7	59 55.05	3.597	6	51 40 2.5	17.355	6
1620	29	1399	252	i. 24	..	..	Camelopardi	6	59 56.49	11.035	8	4 47 44.6	17.356	8
1621	7.8	9 59 58.36	3.684	4	47 20 11.5	17.357	4
1622	6.7	10 1 32.21	3.896	6	38 34 12.6	17.426	6
1623	6.7	1 54.22	4.252	6	29 4 45.3	17.442	6
1624	7	2 50.82	4.251	5	28 54 36.1	17.483	5
1625	..	1415	9	v. 24	..	..	32 Ursæ Maj.	5	4 4.59	4.526	6	23 57 0.5	17.535	6
1626	8.9	4 40.80	3.685	3	46 15 36.3	17.561	3
1627	7.8	5 9.96	3.650	4	47 46 56.7	17.581	4
1628	8	5 10.97	3.651	3	47 45 9.3	17.582	2
1629	29	1421	20	..	423	218	33 Ursæ Maj. λ	3.4	5 35.31	3.683	6	46 8 29.7 } 30.1 }	17.598	25 } 60 }
1630	6.7	5 51.38	3.651	4	47 35 21.3	17.610	4
1631	7.8	5 52.27	4.819	3	20 2 2.6	17.610	3
1632	26	..	..	..	B. F. 1446	6	6 22.06	4.786	6	20 18 13.4	17.631	6
1633	30	..	22	i. 26	..	..	Camelopardi	6	6 42.14	8.648	7	6 29 7.5	17.645	6
1634	7	6 49.70	3.889	5	37 38 58.5	17.650	5
1635	7	7 2.26	3.678	6	46 0 9.6	17.658	6
1636	31	..	..	..	.....	6	7 14.54	3.700	6	44 59 28.7	17.667	6
1637	30	..	..	..	.....	7	7 25.77	4.788	4	20 7 26.1	17.675	4
1638	6	8 8.61	3.968	5	34 50 5.6	17.705	5
1639	..	1430	40	..	..	..	25 Leo. Min.	6.7	9 37.62	3.641	6	47 12 3.7	17.765	5
1640	30 U. Maj.	1429	42	v. 25	..	..	B. F. 1457	5	10 16.33	4.485	7	23 28 44.2	17.791	7
1641	..	1433	44	..	..	..	B. F. 1462	6.7	10 49.92	3.623	6	47 48 38.7	17.813	6
1642	31	1434	45	..	426	..	34 Ursæ Maj. μ	3	10 57.82	3.628	8	47 32 58.2 } 58.0 }	17.819	38 } 67 }
1643	..	1439	..	..	..	225	.....	6	15 41.61	6.982	5	8 32 5.4	18.004	6
1644	70	6	16 9.69	3.605	6	47 25 56.1	18.022	6
1645	69	v. 26	35 Ursæ Maj.	6	10 16 14.32	+4.418	6	23 24 25.6	+18.025	5

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646	6	^h 10 ^m 16 ^s 16.14	+3.759	6	40° 12' 20".6	+18".026	6
647	6.7	16 16.73	3.763	6	40 4 20.9	18.027	6
648	8	18 19.23	3.801	4	38 2 16.5	18.104	4
649	32	1454	80	..	431	..	36 Ursæ Maj.	5	18 22.25	3.949	6	33 3 0.4	18.106	6
650	..	1446	78	..	432	..	.....	5	18 33.02	5.487	6	13 18 51.9	18.113	6
651	7	18 50.98	3.572	5	48 33 41.0	18.124	5
652	..	1455	84	..	..	..	32 Leo. Min.	5.6	18 58.30	3.545	6	50 6 24.1	18.128	6
653	7	19 54.94	3.542	2	50 0 25.7	18.164	2
654	7	19 57.94	3.692	5	42 9 18.6	18.165	5
655	7.8	20 14.45	3.617	4	45 45 57.7	18.176	4
656	7.8	21 6.92	3.630	4	44 50 43.6	18.208	4
657	96	..	..	..	.....	7.8	22 4.59	3.731	5	39 50 48.5	18.242	5
658	33 U. Maj.	..	..	..	..	..	B. F. 1497	5	22 5.89	3.560	6	48 36 3.4	18.244	6
659	100	..	..	..	.....	7	22 41.40	3.726	5	39 55 0.4	18.265	5
660	34	1464	101	..	434	..	37 Ursæ Maj.	5	22 49.46	3.950	9	31 56 35.8	18.269	9
661	105	..	..	..	.....	7	23 55.25	3.573	5	47 6 48.7	18.309	5
662	..	1458	..	..	..	228	.....	6	24 0.59	6.666	5	8 35 21.0	18.312	5
663	8	24 2.77	3.555	5	48 8 37.6	18.314	5
664	8	24 36.70	3.943	4	31 42 41.2	18.333	4
665	6.7	25 10.65	3.908	6	32 35 18.5	18.353	6
666	7	25 47.78	4.036	5	28 53 0.1	18.375	5
667	8	26 14.15	3.921	3	31 54 48.8	18.390	3
668	6	27 43.62	3.806	6	35 20 39.0	18.442	6
669	B. F. 1506	6	28 6.56	4.458	6	20 34 8.6	18.455	6
670	..	1477	122	..	..	229	38 Leo. Min.	6	28 13.43	3.488	6	51 6 13.1	18.459	6
671	8.9	28 45.47	4.461	2	20 24 34.0	18.478	2
672	..	1476	124	v. 28	..	..	38 Ursæ Maj.	5	28 49.34	4.270	8	23 17 34.7	18.480	8
673	35 U. Maj.	..	126	iii. 22	438	..	B. F. 1510	5	29 15.55	4.489	6	19 56 5.6	18.495	6
674	7.8	29 15.70	3.794	6	35 23 6.2	18.495	6
675	7.8	29 26.72	3.550	4	46 51 42.2	18.501	4
676	7.8	30 41.52	4.073	5	26 47 54.5	18.542	5
677	..	1481	133	..	..	..	39 Ursæ Maj.	6	31 37.89	3.878	6	31 48 25.5	18.573	6
678	36 U. Maj.	..	135	..	..	..	B. F. 1520	6.7	32 19.63	3.607	7	42 48 4.0	18.596	7
679	36	..	137	Ursæ Majoris	8	32 47.76	3.604	4	42 47 52.8	18.611	4
680	8	10 33 29.82	+3.645	4	40 27 39.1	+18.634	4

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1681	..	1486	142	40 Ursæ Maj.	6·7	^h 10 ^m 33 ^s 59·27	+3·849	6	32° 5' 8"0	+18"649	6
1682	7	34 3·46	3·574	5	44 2 12·0	18·652	5
1683	7	34 6·06	3·585	5	43 26 23·6	18·653	5
1684	..	1488	144	..	..	..	41 Ursæ Maj.	6	34 22·20	3·860	6	31 38 9·0	18·662	6
1685	8	34 22·35	3·512	4	47 41 44·9	18·662	4
1686	7	35 49·54	3·532	5	45 58 37·9	18·708	5
1687	7·8	35 56·69	5·143	5	13 0 11·8	18·712	5
1688	7·8	36 59·03	3·555	4	44 11 57·7	18·745	4
1689	7	37 5·48	3·475	4	49 15 26·8	18·748	4
1690	157	..	..	..	.....	7	37 52·36	3·535	5	45 4 14·0	18·771	5
1691	7·8	38 28·43	3·518	4	45 55 54·1	18·790	4
1692	8	38 28·91	3·493	3	47 36 32·9	18·790	3
1693	8·9	38 35·34	4·400	3	19 13 51·0	18·793	3
1694	..	1498	161	..	..	..	42 Ursæ Maj.	5	39 20·43	3·877	7	29 40 29·2	18·816	7
1695	..	1499	163	..	..	..	43 Ursæ Maj.	5·6	39 22·53	3·793	6	32 24 56·4	18·818	6
1696	7·8	40 4·62	3·572	4	42 11 57·2	18·838	4
1697	7	40 18·49	4·380	5	19 8 14·8	18·845	5
1698	7	40 48·06	3·633	5	38 43 36·3	18·859	5
1699	170	..	..	..	.....	7	41 1·18	3·680	6	36 25 43·1	18·866	6
1700	171	..	..	..	.....	6·7	41 3·40	3·678	5	36 29 18·6	18·866	5
1701	37	1506	177	..	..	..	44 Ursæ Maj.	5·6	41 58·91	3·719	6	34 24 28·8	18·894	6
1702	8	42 43·30	3·973	4	26 2 32·9	18·916	4
1703	38	1510	182	..	444	..	45 Ursæ Maj. ω	4	42 59·71	3·496	4	45 48 ^{5·6} _{4·6}	18·924	22 8
1704	9	43 32·52	4·340	2	18 58 40·7	18·940	2
1705	7·8	43 42·44	3·466	5	47 39 20·1	18·944	5
1706	..	1508	..	..	..	..	.....	7	44 20·27	5·253	6	11 12 59·3	18·962	6
1707	9	44 31·04	3·464	2	47 31 57·3	18·968	2
1708	8	44 39·88	5·228	4	11 17 38·9	18·972	4
1709	7	44 42·49	3·772	5	31 29 7·8	18·973	5
1710	8·9	44 54·76	4·857	2	13 30 47·9	18·979	2
1711	6	45 21·25	3·467	5	46 58 35·1	18·991	5
1712	8·9	45 31·62	4·837	2	13 33 28·3	18·996	2
1713	8	45 33·14	4·295	3	19 10 28·3	18·996	3
1714	8	45 48·38	4·303	3	18 59 44·5	19·004	3
1715	7	10 46 17·66	+3·453	5	47 38 1·5	+19·017	5

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1716	^h 10 ^m 46 ^s 40.85	+3.614	3	37° 35' 9.9"	+19.027	3
1717	7	48 3.42	3.500	5	43 47 9.8	19.065	5
1718	41?	1522	202	238	47 Ursæ Maj.	6	48 46.76	3.429	6	48 33 27.6	19.085	6
1719	6.7	48 58.14	3.920	6	25 33 37.0	19.090	6
1720	..	1521	..	..	..	..	.....	7	49 7.29	4.757	6	13 32 23.3	19.094	6
1721	49 11.06	3.597	3	37 32 18.2	19.096	3
1722	6	49 16.74	3.496	6	43 27 29.7	19.098	6
1723	6	49 31.36	3.458	6	46 3 55.7	19.104	6
1724	6.7	49 51.94	3.453	6	46 15 6.7	19.113	5
1725	..	1524	206	..	..	..	49 Ursæ Maj.	6	50 9.18	3.407	5	49 46 12.1	19.121	5
1726	40	1523	207	..	449	..	48 Ursæ Maj. β	2	50 17.26	3.694	14	32 36 6.3 7.1	19.124	29 17
1727	7.8	50 27.24	4.228	5	18 56 58.2	19.129	5
1728	7.8	50 36.81	4.861	6	12 31 38.3	19.133	6
1729	42	1528	217	..	452	240	50 Ursæ Maj. α	1.2	51 53.70	3.828	7	27 13 33.5 33.3	19.166	27 14
1730	7	52 51.00	3.459	5	44 38 46.1	19.190	5
1731	8	53 14.54	3.390	3	50 1 4.6	19.200	3
1732	44?	..	..	..	..	..	Ursæ Majoris	7	53 40.34	3.387	5	50 6 39.9	19.211	5
1733	..	1532	226	..	..	..	51 Ursæ Maj.	6.7	53 54.76	3.379	6	50 44 15.9	19.217	6
1734	7	54 56.85	3.446	4	44 40 33.5	19.243	4
1735	7	55 11.44	4.954	5	11 11 14.1	19.248	5
1736	7.8	55 58.67	3.438	3	44 51 39.0	19.267	3
1737	7	56 52.76	3.579	5	36 9 11.4	19.289	5
1738	246	..	..	..	.....	8	57 49.13	3.583	3	34 49 17.4	19.312	3
1739	7	58 14.41	3.530	5	37 35 38.2	19.321	5
1740	247	..	..	..	.....	7.8	58 37.39	3.575	5	34 51 59.0	19.330	5
1741	45	1542	253	..	456	244	52 Ursæ Maj. γ	3.4	58 55.92	3.426	6	44 28 21.5 22.2	19.337	35 28
1742	254	..	..	..	.....	6	10 58 57.35	3.410	5	45 45 51.6	19.338	5
1743	257	..	..	..	.....	6.7	11 0 24.84	3.562	6	34 49 24.3	19.370	6
1744	8	1 0.37	3.395	2	46 8 25.5	19.384	2
1745	7	1 11.82	3.394	6	46 7 31.8	19.388	6
1746	6	1 36.50	3.566	6	34 4 31.0	19.397	6
1747	7.8	1 45.06	4.854	5	10 39 29.9	19.401	5
1748	7	7.8	2 35.38	3.522	3	36 6 59.5	19.419	3
1749	7	3 6.11	3.365	5	47 52 49.5	19.430	5
1750	8	7.8	11 3 33.38	+3.516	3	36 1 5.5	+19.440	3

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1751	8	11 ^h 4 ^m 27 ^s .84	+3.401	4	43° 54' 8".7	+19".459	4
1752	8.9	4 55.31	3.408	2	43 6 59.3	19.468	2
1753	8	5 2.22	3.368	1	46 37 34.4	19.471	1
1754	8	5 2.53	3.407	4	43 6 41.0	19.471	4
1755	6.7	5 3.92	3.501	6	36 11 45.1	19.471	6
1756	8	5 17.03	3.368	2	46 30 58.8	19.476	2
1757	19	..	..	..	B. F. 1592	7.8	5 56.04	3.447	6	39 29 18.2	19.490	6
1758	8	5 58.51	3.363	2	46 36 39.7	19.491	2
1759	7.8	6 21.18	3.354	3	47 14 20.9	19.498	3
1760	8	6 35.74	3.423	3	41 1 37.7	19.503	3
1761	7	7 29.76	3.539	5	32 46 8.3	19.521	5
1762	7	7 41.40	3.667	4	26 46 56.1	19.524	5
1763	27	..	..	..	.....	7	7 55.91	3.352	5	46 38 45.5	19.529	5
1764	48	1555	33	..	465	..	55 Ursæ Maj.	5	8 44.15	3.310	6	50 46 26.1	19.545	6
1765	34	..	..	..	.....	7	9 8.09	3.801	6	21 51 31.9	19.553	6
1766	7	10 13.09	3.447	4	37 11 40.8	19.573	4
1767	7.8	10 23.55	3.556	4	30 28 41.4	19.576	4
1768	7	11 9.58	3.318	5	48 31 37.1	19.591	5
1769	7.8	11 12.97	3.316	4	48 40 46.8	19.592	4
1770	8	11 18.71	3.364	3	43 37 41.7	19.594	3
1771	43	v. 29	..	..	B. F. 1599	6	11 26.72	3.681	6	24 37 54.3	19.597	6
1772	6.7	12 18.82	3.310	5	48 47 4.5	19.613	5
1773	49	1559	46	..	..	..	56 Ursæ Maj.	6	12 20.86	3.339	6	45 28 36.6	19.613	6
1774	7	13 35.23	3.280	5	51 43 26.1	19.635	5
1775	8	15 8.22	3.316	3	46 19 52.5	19.660	3
1776	59	..	..	..	.....	5	15 8.76	3.466	4	33 6 34.0	19.661	6
1777	7.8	15 44.88	3.314	5	46 13 27.5	19.672	5
1778	8	15 56.30	4.903	5	7 55 11.6	19.675	6
1779	8	16 22.28	3.795	3	19 9 57.6	19.682	3
1780	8	16 47.62	3.463	3	32 22 49.0	19.689	3
1781	7	17 29.47	3.267	5	51 0 46.5	19.700	5
1782	i. 27	..	..	.....	6	17 55.13	4.842	6	7 49 43.2	19.707	8
1783	51	..	74	..	..	..	Ursæ Majoris	6	18 7.33	3.541	6	27 11 22.0	19.711	6
1784	7	18 30.13	3.299	5	46 9 31.4	19.717	5
1785	7.8	11 18 38.96	+3.285	2	47 46 43.8	+19.719	2

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1786	50	1571	80	57 Ursæ Maj.	6·7	^h 11 ^m 18 ^s 47·54	+3·271	6	49° 37' 6·6	+19·722	6
1787	7	19 0·70	3·445	5	32 12 56·3	19·725	5
1788	7·8	19 33·74	3·408	5	34 35 21·1	19·733	5
1789	8	19 42·07	3·291	3	46 17 33·2	19·735	3
1790	3	1572	86	iii.23	474	..	1 Draconis λ	3·4	19 58·55	3·719	4	19 37 16·9	19·739	7
1791	7·8	19 59·31	3·436	5	32 12 31·2	19·740	5
1792	7	19 59·69	3·323	5	42 17 52·0	19·740	5
1793	..	1574	87	..	..	..	58 Ursæ Maj.	6	20 11·17	3·293	6	45 47 6·0	19·743	6
1794	7	20 12·31	3·296	5	45 22 44·0	19·743	5
1795	7	20 30·56	3·277	4	47 39 44·4	19·748	4
1796	7	20 30·69	3·331	6	41 1 14·4	19·748	6
1797	B. F. 1620	6	21 29·34	3·491	6	27 51 59·6	19·762	6
1798	7	21 37·79	3·272	4	47 31 3·8	19·764	4
1799	7·8	24 16·83	3·343	4	36 59 4·0	19·802	4
1800	6	24 32·59	3·371	5	34 9 56·9	19·806	6
1801	8·9	24 37·27	3·516	3	24 37 58·4	19·807	3
1802	..	1581	107	iii.24	..	..	2 Draconis	5·6	24 45·57	3·642	7	19 37 16·3	19·809	7
1803	ii. 25	..	..	.....	7	25 28·68	4·066	6	11 21 16·8	19·817	6
1804	6	26 40·10	3·452	9	26 45 14·7	19·833	9
1805	8·9	26 46·34	3·249	3	46 54 35·4	19·834	3
1806	7·8	26 55·20	3·458	7	26 14 16·0	19·836	7
1807	6	27 32·66	3·307	6	38 19 46·2	19·844	6
1808	8	27 34·97	3·476	4	24 46 22·2	19·845	4
1809	7	28 2·25	3·474	5	24 36 8·3	19·850	5
1810	..	1588	122	..	..	..	59 Ursæ Maj.	6	28 10·24	3·251	7	45 19 19·0	19·852	7
1811	..	1589	123	..	..	..	60 Ursæ Maj.	6	28 18·48	3·272	6	42 6 46·7	19·854	6
1812	7	28 41·90	3·257	4	43 50 28·3	19·858	4
1813	7·8	29 37·16	3·252	5	43 47 28·5	19·869	5
1814	129	..	..	..	.....	7·8	29 43·81	3·420	4	26 33 0·7	19·870	4
1815	7·8	29 55·65	3·231	5	46 55 19·1	19·872	5
1816	B. F. 1640	6·7	29 59·05	3·359	6	30 58 42·7	19·873	6
1817	7·8	30 34·58	3·388	5	28 6 15·6	19·879	5
1818	31 9·40	4·810	3	5 30 51·6	19·886	3
1819	..	1595	139	iv.20	3 Draconis	6	31 44·82	3·471	6	22 12 15·9	19·892	6
1820	8	11 32 27·38	+3·227	4	45 9 21·3	+19·900	4

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1821	146	7	^h 11 ^m 33 ^s 31.42	+3.211	5	[°] 47 13 24.1	+19.911	5
1822	8	35 33.45	3.230	2	41 15 51.2	19.931	2
1823	54	1600	152	..	481	261	63 Ursæ Maj. χ	4	35 58.21	3.228	6	41 10 ^s 2.0 } 1.9 }	19.935	37 } 17 }
1824	7.8	36 37.07	3.366	4	24 33 8.3	19.940	4
1825	B. F. 1652	5.6	36 41.42	3.274	6	33 18 55.7	19.941	6
1826	6.7	36 47.40	3.327	6	27 32 29.9	19.942	6
1827	7	40 6.11	3.235	5	34 41 31.5	19.969	5
1828	7.8	40 56.04	3.371	5	20 6 27.4	19.975	5
1829	8.9	41 12.69	3.187	2	41 53 12.1	19.978	2
1830	6.7	41 59.62	3.153	5	50 55 17.0	19.983	5
1831	56	1608	174	..	487	266	64 Ursæ Maj. γ	2.3	43 46.39	3.202	11	35 14 ^s 55.5 } 55.3 }	19.994	33 } 69 }
1832	B. F. 1662	7	43 56.05	3.152	5	48 1 37.0	19.995	5
1833	..	1609	183	..	..	..	65 Ursæ Maj.	7	45 9.59	3.162	6	42 27 57.6	20.002	6
1834	..	1610	184	..	..	..	.....	7.8	45 15.29	3.162	6	42 28 22.8	20.002	6
1835	..	1612	190	..	..	..	66 Ursæ Maj.	5.6	45 58.79	3.197	6	32 20 38.8	20.007	6
1836	7.8	46 11.16	3.140	3	48 17 37.8	20.008	3
1837	7	46 30.99	3.141	6	46 55 42.6	20.009	6
1838	6	46 53.24	3.215	6	27 23 29.0	20.011	6
1839	8	47 2.92	3.134	3	48 35 10.4	20.012	3
1840	7	47 15.97	3.135	8	48 39 12.6	20.013	8
1841	7	47 26.12	3.132	6	48 35 43.0	20.014	6
1842	8	47 37.35	3.562	2	8 18 31.7	20.015	2
1843	6.7	48 21.88	3.197	6	27 28 40.0	20.018	6
1844	7.8	49 20.98	3.187	4	27 36 25.2	20.021	4
1845	6	50 3.92	3.475	5	8 5 13.7	20.025	7
1846	7	50 55.96	3.224	6	18 42 18.3	20.029	6
1847	58	1621	217	..	..	269	67 Ursæ Maj.	6	52 25.55	3.110	6	45 54 1.0	20.033	6
1848	8	53 13.09	3.474	6	5 33 35.9	20.036	6
1849	8	54 12.65	3.133	3	27 32 20.0	20.038	3
1850	i. 28	..	..	.....	6	54 48.47	3.584	6	3 21 35.2	20.039	7
1851	7.8	55 21.57	3.192	4	12 10 31.9	20.041	4
1852	7	55 24.01	3.193	6	12 1 53.2	20.042	6
1853	6	55 59.02	3.115	5	26 0 17.3	20.042	5
1854	7	11 59 48.55	3.069	6	50 18 25.8	20.045	6
1855	7.8	12 0 3.19	+3.068	4	48 41 13.8	+20.045	4

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1856	7·8	12 ^h 1 ^m 31·73 ^s	+3·060	4	49° 48' 48·8	+20·044	4
1857	..	1631	8	68 Ursæ Maj.	6	2 12·48	3·047	6	31 53 15·5	20·044	6
1858	6	2 12·62	2·966	6	7 13 57·2	20·044	6
1859	..	1634	10	ii.26	492	..	.....	6	3 6·87	2·977	6	11 19 38·6	20·043	6
1860	7	4 43·10	2·778	6	5 26 23·1	20·041	6
1861	..	1636	19	..	..	..	1 Can.Venatic.	6	5 14·68	3·025	6	35 30 26·5	20·039	6
1862	59	1637	22	..	493	..	69 Ursæ Maj.	3	5 57·50	3·012	11	31 54 38·6	20·038	30}
1863	iii.26	..	..	.....	6	5 58·83	2·965	6	18 44 31·4	20·038	36}
1864	1	1640	27	..	..	..	2 Can.Venatic.	5	6 34·11	3·034	5	48 16 52·6	20·036	6
1865	iii.27	..	..	.....	7	6 38·45	2·936	5	16 23 25·3	20·036	5
1866	8·9	7 30·25	2·976	3	25 19 0·8	20·033	3
1867	7	10 9·26	3·020	5	51 2 32·0	20·028	5
1868	5	1650	45	ii.28	..	..	Draconis	6·7	10 10·28	2·826	12	13 47 1·2	20·027	12
1869	60	1651	48	..	..	..	3 Can.Venatic.	5·6	10 24·46	2·996	6	39 57 38·8	20·026	6
1870	U.Maj.	..	..	..	..	..	.....	7	10 31·44	3·008	5	45 20 8·6	20·026	5
1871	275	.....	7	11 10·11	1·581	5	2 30 26·0	20·020	7
1872	8	11 17·05	2·942	3	27 38 3·1	20·020	3
1873	7·8	11 29·02	2·926	8	25 16 26·7	20·019	8
1874	8	11 34·90	3·013	4	50 55 15·5	20·019	4
1875	..	1655	56	..	..	..	70 Ursæ Maj.	6	11 35·07	2·956	6	31 4 36·5	20·019	6
1876	8·9	12 27·41	2·927	2	27 11 2·7	20·015	2
1877	7	12 55·93	2·922	6	27 21 11·8	20·012	6
1878	9	13 1·41	2·941	2	30 51 40·1	20·012	2
1879	6	13 7·93	2·284	7	5 34 14·4	20·011	6
1880	8·9	13 14·24	2·920	2	27 28 21·9	20·011	2
1881	..	1660	67	..	..	..	4 Can.Venatic.	6·7	14 24·08	2·988	6	46 24 13·7	20·005	6
1882	8	14 28·74	2·993	4	48 13 36·3	20·005	4
1883	..	1662	71	..	..	..	5 Can.Venatic.	5·6	14 45·12	+2·956	6	37 23 3·0	20·002	6
1884	..	1672	..	i.29	..	278	.....	6	14 48·37	-0·903	5	1 14 48·6	20·002	6
1885	7·8	15 14·24	+2·987	3	47 36 46·4	19·999	3
1886	8·9	15 22·06	2·877	2	25 9 11·7	19·999	2
1887	..	1663	76	..	..	..	71 Ursæ Maj.	6	15 54·96	2·921	7	32 10 3·1	19·996	6
1888	6·7	16 10·40	2·867	6	25 8 36·8	19·994	6
1889	8	16 26·87	2·034	6	5 17 32·7	19·992	6
1890	3	1664	79	6 Can.Venatic.	5	12 16 27·53	+2·987	5	49 55 33·6	+19·992	5

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1891	..	1668	83	72 Ursæ Maj.	7	^h 12 ^m 17 ^s 24.00	+2.917	6	33° 47' 16.6	+19.987	6
1892	6	17 46.48	1.993	6	5 31 3.1	19.984	6
1893	7	18 4.29	2.725	5	17 0 58.5	19.983	5
1894	6.7	18 12.24	2.971	5	47 35 30.3	19.982	5
1895	..	1670	93	..	..	..	73 Ursæ Maj.	6	18 29.64	2.904	6	33 14 2.3	19.979	6
1896	8.9	20 43.99	2.910	3	37 21 35.0	19.962	3
1897	7.8	20 45.33	2.770	5	22 3 15.2	19.962	5
1898	..	1677	106	..	..	..	7 Can. Venatic.	7	21 0.96	2.909	6	37 24 50.5	19.960	6
1899	62	1678	107	..	..	..	74 Ursæ Maj.	6	21 1.85	2.861	6	30 32 50.6	19.959	6
1900	62	..	..	..	..	..	75 Ursæ Maj.	6	21 7.06	2.857	5	30 10 46.9	19.959	5
1901	..	1680	110	iii.28	..	..	4 Draconis	6	21 41.93	2.716	6	19 44 40.8	19.955	6
1902	7	21 44.92	2.959	5	49 21 59.4	19.954	5
1903	6.7	21 45.29	2.893	6	35 52 54.4	19.954	6
1904	7	24 12.61	2.953	5	50 52 50.4	19.933	5
1905	⁹ C. Ven. 63 U. Maj.	1686	126	..	509	281	8 Can. Venatic.	4	24 41.35	2.937	6	47 36 30.9	19.929	6
1906	6	1689	129	iii.29	510	..	5 Draconis α	3	25 17.84	2.645	7	19 9 46.7	19.923	11
1907	7	26 32.80	2.935	4	49 15 59.5	19.911	4
1908	..	1691	135	iii.30	..	..	6 Draconis	5.6	26 36.43	2.617	6	18 55 46.1	19.909	6
1909	6	28 11.13	1.997	7	8 42 3.2	19.892	7
1910	7	29 6.74	2.818	5	34 5 59.9	19.883	5
1911	8.9	29 18.82	2.897	4	44 50 59.7	19.880	4
1912	..	1696	150	..	..	282	9 Can. Venatic.	6.7	29 36.13	2.914	7	48 4 41.1	19.878	7
1913	8	30 39.28	2.749	4	29 12 23.9	19.866	4
1914	8.9	31 46.48	2.739	2	29 17 11.9	19.853	2
1915	8	31 48.74	2.740	4	29 25 43.3	19.852	4
1916	8	32 32.17	2.666	4	25 11 5.6	19.843	4
1917	..	1703	163	..	..	..	76 Ursæ Maj.	6.7	33 12.38	2.677	12	26 14 30.7	19.834	12
1918	6.7	34 41.00	2.686	6	27 48 9.2	19.815	6
1919	6	35 27.18	2.861	6	44 51 18.6	19.805	6
1920	7	35 32.12	2.868	7	45 49 52.0	19.804	7
1921	..	1705	171	..	..	285	10 Can. Ven.	6	35 58.63	2.891	6	49 41 13.6	19.798	6
1922	6	36 10.23	2.847	3	43 31 9.0	19.796	3
1923	6	36 40.61	0.775	6	5 18 45.9	19.789	6
1924	8	37 49.00	2.855	4	45 48 18.8	19.773	4
1925	7	12 39 4.89	+2.786	7	38 48 11.9	+19.754	7

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1926	6	^h 12 ^m 39 ^s 9.16	+2.606	7	26° 10' 46".2	+19.753	7
1927	6	39 35.80	1.500	6	8 20 10.8	19.746	6
1928	..	1713	190	iv.21	..	..	7 Draconis	6	39 45.39	2.502	7	22 10 12.5	19.744	7
1929	..	1712	191	..	..	..	11 Can. Ven.	6	39 55.07	2.797	6	40 29 44.4	19.741	6
1930	B. F. 1774	6	40 20.67	2.639	6	28 38 31.1	19.735	6
1931	6	..	..	..	..	..	B. F. 1775	6	41 7.65	2.878	4	51 26 50.6	19.723	4
1932	64	1722	220	..	518	..	77 Ursæ Maj.	3	45 37.75	2.661	17	33 0 23.6 23.2	19.648	17 56
1933	6	46 14.06	2.768	6	41 46 14.3	19.638	6
1934	8.9	46 30.96	2.651	2	32 51 53.9	19.633	2
1935	⁷ C. Ven. U. Maj.	1725	226	..	522	289	12 Can. Ven.	2.3	47 7.21	2.844	5	50 39 11.2	19.623	5
1936	8	47 19.91	2.642	3	32 46 25.0	19.619	3
1937	32	1730	230	i.30	..	..	Camelopardi	6	47 45.56	0.222	8	5 32 54.9	19.611	8
1938	7.8	47 50.47	2.795	4	45 25 2.2	19.610	4
1939	..	1727	228	v.30	..	..	8 Draconis	6	47 51.67	2.432	6	23 31 42.7	19.609	6
1940	32	1731	232	i.31	521	..	Camelopardi	6	47 53.71	0.218	8	5 33 13.3	19.609	8
1941	..	1726	..	..	..	290	.....	6	47 55.91	2.670	6	34 52 10.7	19.608	6
1942	6	48 25.65	2.765	6	42 47 25.7	19.599	6
1943	7.8	49 29.54	2.296	6	20 21 9.4	19.579	6
1944	iv.22	..	..	.....	7	49 37.81	2.348	7	21 43 40.5	19.576	7
1945	7.8	50 4.10	2.817	5	49 7 40.7	19.568	5
1946	7.8	51 4.81	2.268	6	20 15 58.7	19.548	6
1947	8	51 56.59	2.252	6	20 12 2.4	19.532	6
1948	66	1736	248	..	..	..	78 Ursæ Maj.	5	52 32.35	2.593	6	32 36 24.3	19.520	6
1949	..	1737	250	iv.23	..	..	9 Draconis	6	52 41.49	2.328	6	22 22 32.5	19.518	6
1950	255	..	..	..	.....	6.7	54 19.12	2.406	8	25 22 0.1	19.484	8
1951	8	54 45.00	2.705	2	41 0 31.5	19.475	2
1952	7	54 49.76	2.503	5	29 15 34.8	19.474	5
1953	7	55 11.60	2.760	5	45 58 10.5	19.466	5
1954	7.8	57 0.29	2.785	8	49 22 38.1	19.428	8
1955	7	57 16.94	2.690	5	41 11 52.8	19.422	5
1956	6	57 17.79	2.722	6	43 42 46.3	19.421	6
1957	8	57 33.31	2.685	1	40 57 4.8	19.416	1
1958	8	58 25.62	2.802	3	51 42 52.1	19.396	3
1959	278	6	58 50.46	2.400	6	26 56 13.7	19.388	6
1960	7	12 58 55.85	+1.879	5	15 57 22.3	+19.385	5

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1961	B. F. 1812	6	^h 13 ^m 0 ^s 51.95	+2.790	6	51° 33' 42".9	+19.342	6
1962	10	1749	4	15 Can. Ven.	5	0 56.15	2.778	5	50.27 2.5	19.340	5
1963	..	1750	5	..	..	295	16 Can. Ven.	6.7	1 16.43	2.775	6	50 15 39.7	19.333	6
1964	..	1751	6	..	..	296	17 Can. Ven.	6	1 18.58	2.777	6	50 29 17.3	19.332	6
1965	..	..	12	..	..	..	.....	7	2 27.21	2.355	6	26 45 20.8	19.305	6
1966	..	1753	13	..	..	..	18 Can. Ven.	7	2 49.70	2.745	12	48 11 39.0	19.296	11
1967	..	..	..	..	..	..	.....	7	4 15.82	2.716	5	46 21 48.3	19.262	5
1968	11	..	27	..	..	..	B. F. 1824	5	5 4.81	2.741	4	48 50 16.1	19.242	5
1969	C. Ven.	..	..	..	..	..	.....	8	5 41.83	2.471	2	32 18 31.6	19.226	2
1970	..	..	..	..	..	..	.....	7	5 48.35	2.469	5	32 16 51.1	19.224	5
1971	..	..	..	..	..	..	.....	7.8	6 27.76	2.107	5	21 40 52.9	19.207	5
1972	..	..	..	..	..	..	.....	7.8	6 56.67	2.101	5	21 42 11.8	19.195	5
1973	..	1759	35	..	..	..	19 Can. Ven.	7	6 58.38	2.723	6	48 8 17.5	19.195	6
1974	..	..	..	iii.31	..	..	.....	7	8 4.37	1.721	5	16 11 29.3	19.167	5
1975	12	1765	48	..	536	..	20 Can. Ven.	6	9 0.19	2.717	6	48 25 45.1	19.143	6
1976	13	1767	54	..	537	..	21 Can. Ven.	6	10 8.10	2.577	6	39 19 16.5	19.114	6
1977	..	..	..	..	..	..	.....	6	10 53.10	0.354	6	8 31 19.9	19.094	6
1978	15	1769	61	..	..	..	23 Can. Ven.	6.7	11 46.96	2.708	6	48 50 55.6	19.070	6
1979	..	..	..	..	..	..	.....	7	12 32.88	2.733	5	51 8 39.3	19.049	5
1980	..	..	..	..	..	..	.....	7.8	12 32.99	2.023	4	21 48 17.2	19.049	4
1981	..	..	..	..	..	..	.....	8.9	13 16.81	2.711	3	49 37 17.3	19.028	3
1982	..	..	..	..	..	..	.....	7	14 48.73	1.884	5	19 53 54.6	18.986	5
1983	..	..	..	..	..	..	.....	7.8	14 53.86	2.703	4	49 34 33.3	18.984	4
1984	..	..	..	..	..	..	22 Can. Ven.	7.8	15 3.82	2.505	6	37 21 3.1	18.979	6
1985	..	..	..	..	..	..	.....	8	15 7.64	2.605	3	42 52 52.0	18.977	3
1986	..	..	..	..	..	..	.....	6	15 16.16	2.731	6	51 58 15.4	18.974	6
1987	67	1776	78	..	540	303	79 Ursæ Maj. ζ	3	16 14.80	2.423	12	34 4 45.1 44.9	18.946	50 28
1988	..	1777	79	..	..	..	.....	8	16 16.31	2.423	5	34 4 57.5	18.945	5
1989	..	..	83	..	..	..	.....	7	17 15.98	2.415	3	34 6 35.0	18.916	3
1990	68	1779	85	..	542	..	80 Ursæ Maj. γ	5	17 35.08	2.411	6	34 1 8.2	18.907	6
1991	..	..	..	..	..	..	.....	6.7	18 6.15	2.589	6	42 58 48.3	18.892	6
1992	..	..	..	..	..	..	.....	8	18 48.49	2.064	3	24 9 47.5	18.871	3
1993	..	..	96	..	..	..	.....	7	19 28.92	2.127	6	25 45 38.5	18.851	6
1994	7.8	20 2.09	2.660	7	48 16 47.7	18.835	7
1995	100	7	13 20 23.07	+2.489	5	38 25 39.7	+18.825	5

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1996	7	^h 13 ^m 20 ^s 39.48	+ ^s 2.047	5	[°] 24 ['] 16 ["] 42.5	+18.817	5
1997	7	20 45.43	2.046	5	24 17 40.9	18.814	5
1998	8	20 49.12	1.534	4	16 44 14.5	18.812	4
1999	105	..	..	..	.....	7	20 55.52	2.483	5	38 17 28.2	18.809	5
2000	7.8	21 2.05	2.539	4	41 10 1.0	18.805	4
2001	109	iii.32	..	..	... ..	7	21 17.58	1.513	6	16 37 11.1	18.797	6
2002	69 U. Maj.	..	110	..	..	..	B. F. 1860	6	21 27.08	2.232	6	29 4 10.7	18.792	6
2003	8.9	21 31.02	1.524	2	16 45 55.7	18.790	2
2004	7	21 50.90	1.688	5	18 41 42.0	18.780	5
2005	7	22 43.32	+ 1.689	5	18 53 14.9	18.754	5
2006	7	22 54.33	- 17.187	5	1 20 14.8	18.748	6
2007	6	23 0.01	- 3.299	6	4 15 10.2	18.745	6
2008	6	23 0.34	+ 2.625	6	46 55 5.5	18.745	6
2009	123	..	..	..	.....	7.8	23 56.13	2.532	4	41 47 2.3	18.716	4
2010	8	24 20.29	2.609	5	46 17 17.2	18.703	5
2011	8	25 16.91	2.514	8	41 15 38.7	18.673	8
2012	133	..	..	..	.....	6	25 27.34	0.409	5	10 22 24.9	18.668	6
2013	7	25 57.31	2.661	5	50 14 4.6	18.652	5
2014	136	..	..	..	B. F. 1866	6.7	26 18.05	2.682	6	51 50 26.7	18.641	6
2015	16	1791	138	..	..	308	24 Can. Ven.	5	26 40.10	2.480	6	40 0 31.9	18.628	6
2016	..	1792	141	..	..	..	81 Ursæ Maj.	6	26 47.52	2.327	6	33 40 46.8	18.624	6
2017	6	27 7.83	2.569	4	44 49 43.6	18.614	4
2018	7	28 55.11	2.456	6	39 32 24.4	18.555	6
2019	8	29 22.80	2.604	3	47 35 18.9	18.539	3
2020	7.8	29 27.67	2.591	4	46 49 34.5	18.537	4
2021	9	29 40.70	2.638	3	49 50 47.7	18.530	3
2022	8	29 45.53	2.638	5	49 50 37.9	18.527	5
2023	8.9	29 58.69	2.480	1	40 58 47.5	18.520	1
2024	156	..	..	..	.....	6	30 5.16	2.420	6	38 18 54.3	18.516	6
2025	7.8	31 22.28	1.784	5	21 59 29.0	18.474	5
2026	8	31 24.53	2.474	5	41 8 7.6	18.472	5
2027	7	31 44.48	2.383	2	37 13 43.1	18.461	2
2028	70	1799	165	..	..	..	82 Ursæ Maj.	6	32 8.11	2.352	6	36 7 11.8	18.447	6
2029	iii.33	6.7	32 37.67	1.430	6	17 47 20.2	18.430	6
2030	7	13 33 23.29	+ 2.215	6	31. 49 43.3	+18.404	6

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2031	71	1802	170	83 Ursæ Maj.	5	^h 13 ^m 33 ^s 31.03	+ 2.292	6	34° 21' 31.0"	+ 18.399	6
2032	6.7	34 21.92	2.576	6	47 21 50.8	18.369	6
2033	7.8	35 26.05	2.246	3	33 18 42.8	18.332	3
2034	184	v. 31	..	..	.....	6.7	35 34.42	1.865	5	24 12 55.6	18.327	5
2035	7	36 16.36	1.831	5	23.46 0.9	18.302	5
2036	189	..	..	..	.....	6.7	36 31.63	+ 2.343	6	36 58 35.8	18.293	6
2037	7	36 46.07	- 0.141	6	9 40 54.8	18.284	6
2038	7.8	37 2.72	+ 2.236	5	33 24 26.6	18.274	5
2039	20?	..	..	..	..	..	Can. Venatic.	8.9	37 5.76	2.584	4	48 37 14.0	18.272	4
2040	8.9	37 7.76	2.085	3	29 13 2.4	18.271	3
2041	7.8	37 21.32	2.070	6	28 53 47.6	18.263	6
2042	8	37 55.54	2.570	4	48 0 17.2	18.243	4
2043	B. F. 1892	6.7	38 4.58	2.612	6	50 32 29.0	18.238	6
2044	6	38 8.65	2.568	6	47 57 15.4	18.235	6
2045	200	..	..	..	.....	6.7	38 10.78	2.217	6	33 8 45.1	18.233	6
2046	8.9	38 30.22	1.413	2	18 36 31.1	18.222	2
2047	21	..	..	..	..	..	B. F. 1894	6.7	38 47.27	2.608	6	50 30 10.6	18.212	6
2048	C. Ven.	..	..	..	..	..	.....	8.9	38 52.34	2.567	2	48 5 36.2	18.209	2
2049	..	1812	205	..	..	..	84 Ursæ Maj.	6	39 29.10	2.254	6	34 37 9.2	18.186	6
2050	72	1815	209	..	549	312	85 Ursæ Maj.	2	40 2.26	2.388	20	39 44 ^{5.1} 5.2	18.166	77) 36)
2051	6	40 2.98	2.541	5	46 59 56.9	18.165	5
2052	8	40 28.15	2.363	3	38 48 40.9	18.149	3
2053	551	..	.....	7	42 0.29	0.104	5	10 59 2.0	18.092	5
2054	8	42 52.91	2.525	3	46 54 2.0	18.059	3
2055	6.7	43 33.78	1.950	7	27 33 37.2	18.033	7
2056	233	..	..	..	.....	6.7	43 54.89	2.075	6	30 31 0.5	18.019	6
2057	7	45 5.21	2.549	6	48 43 16.8	17.974	6
2058	7	45 25.01	2.512	5	46 52 31.1	17.962	5
2059	7	1823	243	v. 32	554	..	10 Draconis i	5	45 52.05	1.751	6	24 20 6.9	17.944	6
2060	7	46 19.85	1.489	6	20 44 25.7	17.925	6
2061	8	46 31.51	1.486	2	20 44 1.2	17.919	2
2062	73?	1824	250	..	..	..	86 Ursæ Maj.	6	46 50.57	+ 2.221	6	35 20 16.8	17.907	6
2063	263	6	48 23.09	- 2.448	6	6 17 48.5	17.845	6
2064	8	49 10.74	+ 2.451	5	44 47 8.5	17.813	5
2065	13 49 55.71	- 20.787	4	1 28 50.8	+ 17.783	4

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2066	6	^h 13 ^m 50 ^s 53.07	—0.433	7	10° 4' 0.0	+17.745	7
2067	7.8	51 22.94	+1.804	7	26 16 47.7	17.724	7
2068	7.8	51 37.13	1.871	6	27 35 23.4	17.715	6
2069	8	51 50.20	2.484	3	47 1 33.0	17.706	3
2070	7.8	53 12.75	+1.657	5	24 10 50.4	17.648	5
2071	8	54 8.70	—1.309	5	8 17 54.6	17.610	7
2072	7.8	54 25.00	+2.440	3	45 31 17.9	17.599	3
2073	296	..	..	..	B. F. 1932	7	55 54.74	2.243	6	38 6 38.6	17.536	6
2074	9	56 29.09	1.318	2	20 22 49.7	17.511	2
2075	306	..	..	..	.....	6.7	57 40.46	1.303	6	20 24 15.8	17.460	6
2076	8	1836	312	v. 33	560	317	11 Draconis α	3	59 14.86	1.624	9	24 42 46.7 43.5	17.392	14 11
2077	7	13 59 36.54	2.447	6	46 59 32.6	17.377	6
2078	9	..	316	..	..	..	B. F. 1936	6	14 0 19.61	+2.404	6	45 14 15.4	17.345	6
2079	Boötis	..	..	..	..	..	.....	8	0 37.31	—3.163	2	6 7 37.9	17.332	2
2080	..	1838	6	..	..	..	13 Boötis	6	1 10.66	+2.255	6	39 38 41.8	17.307	6
2081	8	2 33.41	2.488	5	49 34 13.9	17.247	5
2082	6.7	2 52.66	1.874	6	29 45 31.1	17.232	6
2083	6.7	3 58.19	2.421	5	46 45 43.2	17.184	5
2084	24	..	..	..	.....	6.7	5 0.80	1.893	6	30 33 3.3	17.136	6
2085	27	ii. 29	..	..	3 Ursæ Min.	6	5 31.75	0.377	6	14 30 19.1	17.112	6
2086	8.9	6 13.55	2.481	2	49 59 43.1	17.080	2
2087	7	6 21.81	1.169	5	20 14 21.6	17.074	5
2088	12	1849	30 31	..	..	..	17 Boötis α	4	6 39.75	2.148	7	37 19 2.2	17.061	8
2089	6	6 43.23	2.427	6	47 35 4.2	17.058	6
2090	7.8	6 43.61	2.476	5	49 49 58.9	17.057	5
2091	iii. 34	564	..	.....	5	8 33.91	1.080	5	19 40 23.5	16.973	5
2092	15	1852	41	..	567	323	19 Boötis λ	4	9 9.16	2.304	5	43 2 5.8	16.945	6
2093	17	1854	42	..	569	324	21 Boötis ϵ	4	9 25.49	+2.144	8	37 45 7.5 6.9	16.933	33 39
2094	4	1859	49	ii. 30	566	322	4 Ursæ Min.	5	9 47.11	—0.436	6	11 33 36.4	16.915	7
2095	8	10 20.66	+2.467	2	50 9 2.1	16.889	2
2096	..	1856	50	..	..	..	B. F. 1965	6	10 35.54	2.139	6	37 48 34.7	16.878	6
2097	7	11 6.97	2.469	5	50 21 17.2	16.853	5
2098	7	11 21.68	+2.395	5	47 6 43.0	16.842	5
2099	7	11 38.56	—9.386	6	3 20 11.0	16.828	5
2100	6	14 11 59.43	+2.465	6	50 19 42.0	+16.812	6

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2101	8	^h 14 ^m 12 ^s 12.93	+1.211	3	21° 25' 43".2	+16".801	3
2102	7	12 37.14	1.995	6	34 15 31.1	16.781	6
2103	79	..	..	..	.....	7.8	15 34.99	2.028	3	35 36 36.2	16.638	3
2104	B. F. 1976	7.8	15 36.89	2.484	5	51 55 41.3	16.637	5
2105	6.7	16 12.21	1.154	5	21 20 46.7	16.608	5
2106	80	..	..	..	.....	7.8	16 10.06	2.337	4	45 40 25.1	16.610	4
2107	7	17 11.93	1.661	6	28 9 45.8	16.559	6
2108	7	17 28.21	1.136	5	21 19 44.0	16.546	5
2109	B. F. 1980	6.7	17 43.74	2.451	6	50 44 36.9	16.533	6
2110	21	1867	92	..	570	326	23 Boötis θ	4	18 43.43	2.069	9	37 15 58.8 16 0.7	16.484	44 20
2111	7.8	18 53.36	+2.003	5	35 33 1.0	16.476	5
2112	9	20 45.68	-0.425	3	12 26 0.5	16.382	3
2113	102	..	..	..	.....	7	21 18.06	+2.409	6	49 31 44.8	16.355	6
2114	6.7	22 0.88	2.289	6	44 53 11.5	16.318	6
2115	..	1868	105	..	..	327	24 Boötis g	6	22 1.00	2.120	6	39 18 2.1	16.318	6
2116	6	22 7.32	2.352	6	47 20 31.1	16.314	6
2117	8	23 36.88	2.398	3	49 27 30.2	16.237	3
2118	8	23 45.28	+1.639	3	28 45 51.5	16.230	3
2119	8.9	24 2.96	-0.481	3	12 28 44.7	16.214	3
2120	23	1871	117	..	573	..	27 Boötis γ	3	24 25.28	+2.427	9	50 51 19.9	16.195	11
2121	B. F. 1992	6	25 34.23	2.453	6	52 11 48.8	16.135	6
2122	8.9	25 58.14	1.620	3	28 45 32.5	16.115	3
2123	6	26 15.86	1.434	6	25 58 16.1	16.099	6
2124	7	26 27.98	2.302	6	46 9 19.1	16.089	6
2125	126	..	..	..	.....	6.7	26 33.53	+1.626	6	28 56 0.0	16.084	6
2126	8.9	26 36.90	-0.578	3	12 20 25.0	16.081	3
2127	6.7	27 9.46	+2.191	6	42 22 33.2	16.053	6
2128	9	27 37.00	-0.538	3	12 30 15.7	16.061	3
2129	7.8	27 41.67	+0.985	8	21 4 37.0	16.025	8
2130	5?	1873	136	ii. 31	575	332	5 Ursæ Min.	4	28 4.45	-0.294	4	13 27 33.3	16.006	4
2131	7.8	28 31.65	+1.781	5	32 5 13.9	15.981	5
2132	6	29 37.04	1.225	5	23 46 19.6	15.923	5
2133	6.7	29 41.74	2.293	6	46 20 9.2	15.919	6
2134	7	30 3.94	1.396	6	25 56 57.3	15.900	6
2135	B. F. 2001	6	14 31 3.99	+2.265	6	45 32 0.3	+15.846	6

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2136	148	7	^h 14 ^m 31 ^s 41.23	+2.001	5	[°] 37 ['] 35 ^{''} 48.0	+15.813	5
2137	..	1878	149	33 Boötis	6	31 45.94	2.240	6	44 46 13.4	15.809	6
2138	156	..	..	..	.....	5.6	32 13.52	1.898	6	35 9 4.9	15.784	6
2139	7	32 23.39	+2.401	6	51 4 7.1	15.775	6
2140	8	32 42.06	-0.626	3	12 36 4.3	15.758	3
2141	7	33 23.79	+2.398	6	51 2 23.9	15.720	6
2142	8	33 48.90	2.336	3	48 37 1.9	15.697	3
2143	8.9	34 43.17	2.315	2	47 56 48.7	15.648	2
2144	8.9	36 11.13	2.311	1	48 2 23.1	15.568	1
2145	B. F. 2017	6	36 22.08	2.329	6	48 43 54.8	15.558	6
2146	6	37 19.37	1.470	6	27 55 29.2	15.505	6
2147	8	37 53.27	0.271	4	16 53 34.2	15.473	4
2148	8	38 11.56	2.391	3	51 27 37.5	15.457	3
2149	182	..	..	..	B. F. 2024	7	38 19.80	2.269	6	46 48 57.0	15.448	6
2150	7	39 22.01	1.464	6	28 5 39.0	15.391	6
2151	8	40 31.92	2.384	4	51 31 56.1	15.325	4
2152	B. F. 2028	6.7	41 38.94	2.376	6	51 24 2.3	15.262	6
2153	..	1900	198	..	..	339	38 Boötis <i>h</i>	6	42 32.31	2.138	6	43 5 12.7	15.212	6
2154	³⁴ Boötis	..	..	..	..	..	B. F. 2033	6	42 59.54	2.385	7	51 56 34.6	15.186	7
2155	..	1902	200	..	..	..	39 Boötis	6	43 13.67	2.045	6	40 29 36.0	15.172	6
2156	202	..	..	..	.....	7.8	43 20.89	1.819	5	34 58 34.6	15.165	5
2157	7	43 22.22	1.943	5	37 50 3.8	15.164	5
2158	7	44 14.20	2.335	5	50 6 33.1	15.115	5
2159	8.9	44 28.47	1.939	2	37 54 7.4	15.101	2
2160	8	44 39.17	1.929	3	37 40 55.2	15.091	3
2161	..	1906	210	iii.35	..	..	6 Ursæ Min.	7	44 55.68	0.230	6	17 14 26.6	15.076	6
2162	B. F. 2036?	7	45 21.11	2.113	5	42 44 12.4	15.051	5
2163	8.9	46 32.20	1.043	1	23 40 34.2	14.982	1
2164	217	..	..	..	.....	5.6	46 37.64	1.525	6	29 55 49.3	14.976	6
2165	8	47 2.42	1.028	3	23 34 12.0	14.953	3
2166	7.8	47 2.78	1.722	4	33 28 27.1	14.952	4
2167	7.8	47 53.48	2.097	5	42 37 42.5	14.903	5
2168	8	48 58.75	2.211	3	46 22 8.2	14.839	3
2169	7.8	49 0.94	+2.214	3	46 26 8.6	14.837	3
2170	7	14 49 15.21	-4.553	6	6 43 55.3	+14.823	6

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2171	235	B. F. 2049	5.6	^h 14 ^m 50 ^s 4.92	+1.976	6	39° 35' 23.3	+14".774	6
2172	6	1917	240	iii.36	592	340	7 Ursæ Min. β	3	51 22.80	-0.307	13	15 4 5.5	14.697	14
2173	36	1914	248	..	..	..	40 Boötis	6	52 19.74	+2.301	6	49 58 32.3	14.640	6
2174	6.7	53 17.50	2.140	6	44 39 15.9	14.583	6
2175	9	54 2.14	1.685	2	33 38 23.7	14.538	2
2176	B. F. 2056	6	54 9.85	2.044	6	41 58 1.2	14.530	6
2177	10	..	..	v. 34	596	..	Draconis	5	54 35.14	0.927	5	23 18 30.6	14.505	6
2178	38	1918	259	..	597	..	42 Boötis β	3	54 47.29	2.262	7	48 51 15.3 14.3	14.493	22 34
2179	7.8	55 2.39	+1.678	5	33 37 38.0	14.478	5
2180	7	56 26.66	-0.566	6	14 21 24.7	14.392	6
2181	274	..	..	..	.....	7.8	56 56.69	+0.951	4	23 46 11.6	14.361	4
2182	6	57 1.93	1.389	5	29 2 45.4	14.356	5
2183	..	1923	275	..	600	344	44 Boötis i	5.6	57 31.44	+2.015	6	41 36 5.2	14.326	6
2184	7.8	57 50.34	-1.720	5	11 3 37.6	14.307	5
2185	283	..	..	..	<i>8 Ursæ Min.</i>	7	58 19.84	-0.601	6	14 20 35.0	14.277	6
2186	9	58 48.76	-0.618	2	14 18 19.4	14.247	2
2187	7	59 0.96	+1.386	6	29 13 49.4	14.234	6
2188	..	1925	..	..	..	..	47 Boötis k	6	59 8.24	1.989	6	41 6 35.7	14.227	6
2189	8	14 59 27.46	0.877	2	23 17 24.6	14.207	2
2190	7	15 0 1.90	0.892	4	23 28 19.4	14.172	4
2191	2	iii.37	..	..	9 Ursæ Min.	6	0 17.72	0.066	6	17 29 31.8	14.156	6
2192	6	1 6.38	+0.867	5	23 20 24.4	14.105	5
2193	9	1 54.86	-0.676	2	14 16 42.0	14.056	2
2194	7	2 17.96	+1.898	6	39 12 48.2	14.031	6
2195	8	3 41.24	+0.863	2	23 31 45.3	13.944	2
2196	5	4 1.86	-5.096	6	6 43 3.1	13.922	6
2197	7	4 15.27	+1.109	6	26 9 17.1	13.908	6
2198	8	5 17.16	1.939	3	40 35 11.2	13.841	3
2199	7	5 34.66	+0.841	5	23 29 12.3	13.825	5
2200	27	iii.38	..	..	10 Ursæ Min.	7	6 15.96	-0.460	6	15 22 50.3	13.781	6
2201	6	6 21.48	+2.282	5	51 1 6.5	13.775	5
2202	7	6 34.78	1.938	5	40 42 20.6	13.758	5
2203	7.8	6 54.56	1.584	5	33 15 29.5	13.740	5
2204	6.7	7 1.03	1.888	5	39 30 37.9	13.733	6
2205	6.7	15 7 14.16	+2.135	6	46 14 30.6	+13.719	6

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2206	6	^h 15 ^m 7 ^s 18.21	+ 2.163	6	[°] 47 ['] 6 ["] 55.3	+ 13.715	6
2207	7.8	7 35.94	0.255	5	19 7 57.4	13.696	5
2208	7	7 43.80	2.277	5	50 59 28.7	13.688	5
2209	7.8	7 57.29	+ 1.577	5	33 14 25.7	13.674	5
2210	7	8 22.65	- 14.010	6	3 16 49.2	13.647	6
2211	8	8 40.90	+ 1.569	1	33 10 8.6	13.627	1
2212	8	8 42.95	+ 0.830	3	23 38 52.0	13.625	3
2213	6	12 14.42	- 7.607	5	5 19 10.8	13.398	6
2214	5.6	12 30.09	+ 0.596	6	21 55 48.0	13.381	6
2215	8.9	12 50.78	1.093	3	26 46 18.5	13.358	3
2216	7	13 7.82	2.180	6	48 19 59.9	13.339	6
2217	56	..	..	..	.....	7.8	13 34.21	1.838	5	39 5 37.8	13.310	5
2218	8.9	14 15.88	1.740	2	37 1 33.3	13.265	2
2219	8.9	14 47.68	1.110	2	27 8 58.8	13.230	2
2220	8	15 33.96	1.169	3	27 56 7.2	13.179	3
2221	6	15 35.79	2.215	6	49 44 3.8	13.177	6
2222	8.9	15 56.05	1.105	3	27 11 5.3	13.155	3
2223	7.8	15 57.68	1.728	4	36 58 15.2	13.153	4
2224	6.7	16 26.02	+ 1.072	8	26 50 28.9	13.121	8
2225	12 Ursæ Min.	7	17 9.75	- 0.031	6	18 5 55.3	13.075	6
2226	610	353	.....	4	17 18.90	+ 2.275	6	51 57 2.2	13.063	6
2227	7	17 20.12	+ 2.276	3	51 58 49.6	13.062	3
2228	..	1954	78	iii.39	609	..	11 Ursæ Min.	5	17 20.17	- 0.150	4	17 29 13.6	13.062	7
2229	8.9	17 20.40	+ 1.730	2	37 10 4.5	13.062	2
2230	7	18 58.31	1.946	5	42 15 53.6	12.954	5
2231	6.7	19 6.25	1.089	5	27 16 26.8	12.945	5
2232	7	19 28.93	2.047	6	45 1 38.8	12.920	6
2233	8	19 52.56	1.123	3	27 44 39.9	12.893	3
2234	7.8	20 35.57	1.201	5	28 47 19.2	12.846	5
2235	11	1957	92	..	613	..	12 Draconis	3	20 43.02	+ 1.316	6	30 21 ["] 53.1 52.4	12.835	39 37
2236	7	1962	95	iii.41	612	354	13 Ursæ Min.	3	21 6.78	- 0.194	5	17 29 25.0	12.810	10
2237	6.7	21 27.66	+ 2.223	6	50 36 50.1	12.787	6
2238	14 Ursæ Min.	7	23 6.74	- 0.577	6	15 51 22.9	12.674	6
2239	6	23 20.54	+ 1.902	6	41 37 44.9	12.658	6
2240	7	15 24 3.19	+ 1.537	6	34 8 59.7	+ 12.610	6

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2241	6	^h 15 ^m 24 ^s 6.29	+1.168	8	[°] 28 ['] 40 ^{''} 15.4	+12.607	8
2242	1 Herc.	1965	108	52 Boötis γ^1	6	24 6.58	2.149	6	48 30 48.5	12.607	6
2243	110	..	..	..	.....	7	24 19.54	1.033	5	27 3 52.7	12.592	5
2244	..	1967	112	..	..	..	53 Boötis γ^2	6	24 59.01	2.144	6	48 27 0.7	12.547	6
2245	7	25 11.29	1.075	6	27 37 8.1	12.533	6
2246	119	..	..	..	.....	7	26 0.94	1.037	6	27 14 51.8	12.477	6
2247	8.9	26 1.51	1.562	2	34 46 34.6	12.476	2
2248	8	26 50.05	1.564	4	34 52 53.2	12.421	4
2249	..	1979	135	..	623	..	6 Cor. Bor. μ	5	28 16.63	2.195	6	50 21 9.9	12.322	6
2250	136	..	..	..	.....	7	28 17.39	0.823	6	25 8 59.7	12.321	6
2251	7	28 21.83	2.025	5	45 17 49.3	12.316	5
2252	9	28 32.73	0.827	2	25 12 37.2	12.303	2
2253	6	28 39.20	2.056	6	46 11 51.9	12.296	6
2254	7	29 33.08	1.791	6	39 39 58.4	12.234	6
2255	7	30 15.03	1.577	5	35 26 38.4	12.186	5
2256	..	1982	147	..	..	..	54 Boötis ϕ	6	31 0.50	2.144	6	49 1 19.2	12.133	6
2257	6.7	31 4.52	1.534	6	34 44 15.9	12.128	6
2258	7	31 56.37	2.029	6	45 46 15.2	12.067	6
2259	153	..	..	..	B. F. 2143 ?	6	32 11.20	1.906	12	42 34 15.7	12.050	12
2260	6.7	32 39.67	1.533	7	34 51 52.9	12.017	7
2261	156	..	..	..	.....	7	32 57.24	1.898	6	42 27 0.5	11.996	6
2262	6	33 1.66	1.743	5	38 57 8.5	11.991	5
2263	7.8	33 19.09	0.355	5	21 33 25.4	11.971	5
2264	7.8	33 57.84	2.014	6	45 32 21.6	11.925	6
2265	8	34 25.41	1.337	4	31 51 34.1	11.893	4
2266	7.8	34 37.78	1.340	4	31 55 6.0	11.879	4
2267	6.7	34 58.57	+1.307	7	31 27 29.0	11.854	7
2268	..	2008	172	ii. 32	630	..	15 Ursæ Min. γ	5	37 16.82	-2.029	5	12 1 21.3	11.691	6
2269	8	37 32.41	+1.882	4	42 29 39.1	11.673	4
2270	6	37 41.24	+1.627	6	37 1 6.5	11.662	6
2271	7	38 18.98	-0.238	6	18 13 59.6	11.618	6
2272	7.8	39 2.43	+1.593	5	36 29 47.3	11.566	5
2273	7	39 23.55	1.587	5	36 25 11.2	11.541	5
2274	7.8	40 12.79	+1.600	5	36 43 36.3	11.482	5
2275	6	15 40 41.80	-3.912	7	8 55 52.8	+11.447	7

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2276	6	^h 15 ^m 40 ^s 54.46	— 3.918	7	[°] 8 55' 47.7	+ 11.432	3
2277	7.8	41 0.05	+ 1.866	6	42 25 21.2	11.425	6
2278	8	42 2.80	1.167	5	30 5 37.4	11.350	5
2279	7.8	43 46.10	1.145	5	29 55 47.8	11.226	5
2280	12	..	198	..	..	..	Draconis	5.6	43 47.86	0.877	12	26 48 38.7	11.224	12
2281	7	43 53.04	1.138	6	29 50 43.3	11.217	6
2282	7.8	44 11.24	+ 0.140	6	20 44 0.9	11.195	6
2283	6	45 17.78	— 27.669	8	2 4 19.4	11.114	8
2284	..	2021	211	..	..	371	1 Herculis α	6	46 6.62	+ 2.029	6	47 0 37.7	11.056	6
2285	7	46 11.75	+ 1.562	5	36 31 8.2	11.049	5
2286	6	46 26.10	— 5.864	6	7 7 14.2	11.031	6
2287	8	47 9.07	+ 1.885	6	43 23 35.5	10.979	6
2288	5	47 52.00	1.382	5	33 36 30.1	10.927	5
2289	..	2025	221	..	..	..	2 Herculis	6	48 18.16	1.996	6	46 18 8.0	10.895	6
2290	..	2027	224	..	..	..	12 Cor. Bor. λ	5	48 53.04	2.174	6	51 29 53.2	10.852	6
2291	2	2028	226	..	..	..	4 Herculis	6	49 6.85	+ 2.015	6	46 52 30.4	10.836	6
2292	18 Ursæ Min.	6	50 28.55	— 3.726	5	9 25 51.2	10.735	7
2293	6.7	50 48.57	+ 2.112	6	49 45 19.8	10.710	6
2294	8	2041	238	ii. 33	649	374	16 Ursæ Min. ζ	4	51 4.97	— 2.426	12	11 37 38.0	10.690	11
2295	5.6	52 9.52	+ 1.146	6	30 32 11.9	10.610	6
2296	5.6	53 17.77	1.426	6	34 42 33.9	10.526	6
2297	6	53 41.36	+ 1.691	6	39 34 22.5	10.497	6
2298	54 20.13	— 3.893	5	9 18 17.2	10.449	5
2299	7	55 25.09	+ 2.089	6	49 26 40.6	10.368	6
2300	8	56 4.37	— 0.645	1	17 8 59.3	10.318	1
2301	4	2044	270	..	658	..	6 Herculis ν	5	56 53.12	+ 1.855	6	43 25 50.2	10.258	6
2302	5.	57 15.22	+ 1.518	6	36 33 7.0	10.230	6
2303	7	57 37.11	— 0.679	6	17 4 0.0	10.203	6
2304	13	2053	277	..	659	378	13 Draconis β	3	58 20.52	+ 1.144	17	30 55 27.27 25.95	10.148	50 58
2305	7	58 23.74	2.112	6	50 19 26.6	10.144	6
2306	7.8	58 30.25	1.057	3	29 50 38.0	10.136	3
2307	7	59 38.39	+ 0.184	6	21 50 39.3	10.049	6
2308	..	2063	288	ii. 34	17 Ursæ Min.	7	15 59 42.02	— 1.610	6	13 53 7.7	10.045	6
2309	7.8	16 1 13.78	+ 1.011	3	29 26 20.4	9.929	3
2310	7	16 1 20.50	+ 1.778	6	41 58 59.7	+ 9.920	6

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2311	6	2061	13	11 Herculis ϕ	5	16 ^h 2 ^m 47 ^s ·35	+1 ^s ·885	6	44 ^o 33' 41"·2	+9"·810	6
2312	8	3 38·40	-0·253	4	19 22 13·8	9·745	4
2313	7	3 46·32	+2·051	6	48 56 52·7	9·735	6
2314	7	3 56·22	+1·641	6	39 19 4·2	9·723	6
2315	6	4 3·38	-7·191	6	6 29 52·3	9·714	6
2316	..	2068	22	..	..	382	14 Herculis	7	4 14·76	+1·925	6	45 40 2·1	9·699	6
2317	6·7	5 26·73	2·100	6	50 26 59·7	9·607	6
2318	6	5 30·50	+1·979	6	47 7 58·8	9·602	6
2319	7	5 34·16	-0·295	6	19 13 53·6	9·598	6
2320	664	..	.....	5	5 51·21	+0·116	6	21 41 20·3	9·576	6
2321	7	6 27·30	2·131	6	51 26 22·3	9·530	6
2322	7	6 42·47	1·000	6	29 37 56·4	9·511	6
2323	7	7 12·76	0·664	6	26 5 46·6	9·471	6
2324	8	7 32·78	1·012	3	29 49 35·3	9·445	3
2325	56	..	..	..	.....	7	11 9·51	1·449	6	36 17 8·2	9·166	6
2326	6·7	11 45·17	0·176	6	22 22 26·0	9·119	6
2327	8	12 24·67	0·247	3	22 54 13·6	9·068	3
2328	6	13 24·88	2·060	6	49 49 50·5	8·990	6
2329	14	..	69	..	..	..	Draconis	7	13 32·67	0·274	11	23 9 3·4	8·980	11
2330	6	13 53·15	1·668	6	40 30 7·5	8·953	6
2331	11	2086	73	..	672	..	22 Herculis τ	5	14 2·06	1·796	4	43 13 42·2 } 42·3 }	8·941	11 } 35 }
2332	5	14 6·07	0·976	6	29 45 52·7	8·936	6
2333	7	15 36·61	+1·504	6	37 30 18·2	8·818	6
2334	..	2096	82	ii. 36	675	..	19 Ursæ Min.	5	16 23·80	-1·882	5	13 38 57·1	8·756	6
2335	8	16 50·73	-1·063	3	16 14 23·8	8·720	3
2336	..	2099	86	ii. 37	..	..	20 Ursæ Min.	6	17 28·15	-1·651	6	14 19 22·7	8·671	6
2337	iii. 42	..	..	.....	6	17 47·14	-1·097	6	16 8 37·4	8·646	6
2338	7	18 17·40	-0·077	6	20 59 36·5	8·606	6
2339	7	18 54·56	+1·855	5	44 52 17·0	8·557	5
2340	6	19 43·78	1·478	6	37 16 22·2	8·492	6
2341	7	19 58·76	2·006	5	48 45 13·1	8·472	5
2342	7	20 11·91	1·509	4	37 50 52·9	8·455	4
2343	5	20 16·55	1·296	6	34 21 31·8	8·449	6
2344	7	21 8·72	1·702	5	41 37 4·6	8·381	5
2345	6	16 21 17·35	+0·772	6	27 52 7·5	+8·369	6

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2346	15	2104	102	..	685	..	14 Draconis η	3	16 ^h 21 ^m 26 ^s .20	+0.789	15	28° 3' 12".0 } 12".0 }	+8".357	46 } 35 }
2347	..	..	..	..	..	..	.....	5.6	22 18.24	-0.195	6	20 27 6.1	8.288	6
2348	15	2102	105	..	..	..	30 Herculis g	5	22 24.32	+1.960	6	47 41 39.5	8.280	6
2349	10	2111	114	ii. 38	688	387	21 Ursæ Min. η	5	23 11.45	-1.890	6	13 48 45.3	8.218	6
2350	..	..	..	..	..	..	.....	6.7	23 13.58	+1.507	6	37 59 7.2	8.215	6
2351	..	..	..	..	..	..	.....	6.7	23 53.27	1.515	6	38 10 19.2	8.162	6
2352	..	..	..	..	..	..	.....	7	23 57.24	1.496	2	37 49 41.8	8.157	2
2353	..	2107	118	..	..	..	34 Herculis	6	24 53.18	1.642	6	40 37 14.4	8.082	5
2354	..	..	..	..	..	..	.....	7	24 54.06	1.692	5	41 37 4.4	8.081	5
2355	..	..	127	..	..	..	B. F. 2285	7	27 3.70	+2.092	6	51 30 36.4	7.908	6
2356	..	..	..	..	..	..	.....	7	27 24.97	-0.670	6	18 11 39.1	7.879	6
2357	..	..	..	..	..	..	.....	6	27 56.27	+1.574	6	39 27 12.8	7.837	5
2358	17	2113	132	..	..	..	35 Herculis σ	4	27 58.71	+1.928	3	47 9 53.7	7.834	5
2359	17	2118	135	iv. 25	695	..	15 Draconis A	5.6	28 23.95	-0.169	4	20 49 16.1	7.800	18
2360	..	..	..	..	..	..	.....	6	29 21.10	+1.453	6	37 21 51.7	7.724	6
2361	..	..	140	..	..	..	.....	6	29 45.77	+0.821	6	28 46 32.9	7.690	6
2362	..	..	..	..	..	..	.....	6	30 39.04	+1.742	6	42 59 48.4	7.618	6
2363	..	..	..	..	..	..	.....	8	30 50.38	-3.483	3	10 41 23.2	7.602	3
2364	..	..	..	..	..	..	.....	7	31 37.51	+2.030	5	50 2 8.0	7.540	5
2365	16	2122	152	..	698	390	16 Draconis	5	31 42.44	1.407	6	36 42 49.5	7.533	6
2366	16	2124	153	..	..	391	17 Draconis	5	31 44.87	1.406	6	36 41 20.9	7.529	6
2367	..	..	..	..	..	..	.....	7	33 4.16	0.486	6	25 40 35.4	7.422	6
2368	19	2128	163	..	..	..	42 Herculis	5	33 35.78	1.623	6	40 41 42.5	7.379	6
2369	..	..	..	..	..	..	.....	6	34 10.90	1.197	6	33 36 34.3	7.331	6
2370	..	..	..	..	..	..	.....	6	35 1.62	0.575	6	26 32 36.3	7.263	6
2371	20	2133	173	..	700	394	44 Herculis η	3	36 22.99	+2.047	15	50 42 34.8 } 36.1 }	7.152	26 } 49 }
2372	..	..	182	..	..	..	.....	6	36 34.27	-3.578	6	10 38 31.1	7.137	6
2373	..	..	195	..	..	..	.....	6	38 59.28	-2.739	6	12 11 1.6	6.939	6
2374	..	..	..	..	..	..	.....	5.6	39 5.95	+1.206	5	33 57 25.1	6.930	6
2375	18	2141	197	v. 35	703	..	18 Draconis g	5	39 37.68	0.383	6	25 2 58.9	6.886	6
2376	..	..	..	..	..	..	.....	6	41 15.33	1.912	6	47 24 59.7	6.752	6
2377	..	..	..	..	..	..	.....	5	41 42.03	+1.120	6	32 52 29.9	6.716	6
2378	..	..	..	..	..	..	.....	7	42 4.15	-2.889	6	11 56 29.2	6.685	6
2379	8	43 12.24	-2.880	6	11 58 42.1	6.592	6
2380	22	2149	224	..	707	..	52 Herculis	5	16 43 40.88	+1.745	6	43 40 49.0	+6.553	6

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2381	6.7	^h 16 ^m 43 ^s 46.64	+1.858	6	46° 14' 12.8	+ 6".545	6
2382	6.7	44 12.37	-2.939	6	11 52 52.0	6.509	6
2383	6.7	44 31.34	+1.921	6	47 46 41.8	6.483	6
2384	231	..	..	..	.....	7	44 37.13	1.058	5	32 10 30.7	6.475	5
2385	7.8	45 4.20	1.912	2	47 35 45.4	6.437	2
2386	6.7	45 14.87	0.504	6	26 16 47.3	6.423	6
2387	239	..	..	..	.....	7.8	45 41.34	+0.487	6	26 8 18.6	6.386	6
2388	7	46 15.49	-1.421	5	15 46 13.6	6.339	5
2389	7	47 32.40	+1.877	6	46 50 32.4	6.232	6
2390	5.6	51 27.33	+0.795	6	29 19 52.0	5.906	6
2391	6	51 42.73	-2.857	6	12 10 1.9	5.884	6
2392	6.7	51 51.17	+1.884	6	47 11 18.4	5.872	6
2393	6	52 53.90	0.620	5	27 35 47.5	5.786	5
2394	7	53 41.91	2.017	6	50 37 4.6	5.718	6
2395	282	..	..	..	.....	6	54 27.38	0.588	5	27 20 11.7	5.655	5
2396	20	2169	286	v.36	714	..	19 Draconis <i>h</i> ¹	5	55 0.55	0.263	6	24 34 26.8	5.608	6
2397	20	2170	290	v.37	..	..	20 Draconis <i>h</i> ²	6	55 29.80	+0.273	6	24 40 14.2	5.568	7
2398	6.7	55 31.04	-1.963	5	14 18 57.1	5.566	4
2399	291	..	..	400	.....	5.6	55 53.09	+1.092	6	33 1 44.0	5.535	6
2400	8	55 53.82	-1.299	3	16 23 24.2	5.534	3
2401	7	55 55.56	-0.075	6	22 13 45.8	5.531	6
2402	7	56 18.34	-0.614	5	19 14 20.9	5.499	5
2403	8.9	56 58.65	-0.069	2	22 17 25.3	5.442	2
2404	7.8	57 24.95	-1.195	4	16 47 17.0	5.406	4
2405	7.8	58 29.92	-1.604	4	15 25 2.0	5.314	4
2406	6.7	58 55.92	-1.984	6	14 18 52.5	5.278	6
2407	8.9	59 12.89	-0.338	2	20 44 21.9	5.254	2
2408	307	..	..	..	.....	6	59 18.03	+1.819	6	45 55 25.7	5.247	6
2409	8	16 59 54.36	-1.704	2	15 7 57.3	5.196	2
2410	7.8	17 0 2.28	-1.671	4	15 14 16.6	5.185	4
2411	iii.43	..	..	.....	6	0 7.78	-1.266	7	16 35 21.2	5.177	7
2412	6.7	0 8.31	-0.378	6	20 32 8.6	5.176	6
2413	7	1 10.64	-1.614	5	15 26 0.4	5.088	5
2414	21	2175	718	..	21 Draconis μ	5	1 24.34	+1.240	7	35 16 31.6 30.9	5.069	10 3
2415	5.6	17 1 35.17	+1.954	6	49 13 46.4	+ 5.054	6

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2416	8	^h 17 ^m 1 ^s 55.08	+0.690	4	28° 23' 25.7"	+5.026	4
2417	8.9	4 11.65	+0.674	2	28 26 44.6	4.833	2
2418	7	4 25.51	-1.299	9	16 32 34.8	4.813	9
2419	..	..	..	..	..	..	.....	6.7	5 20.71	-3.000	5	12 4 40.0	4.735	5
2420	..	..	..	..	..	..	.....	7	5 22.55	-1.336	9	16 25 44.8	4.732	9
2421	..	..	..	..	..	..	.....	7	5 48.17	+1.900	6	48 2 7.3	4.695	6
2422	10	2201	36	i. 35	720	..	22 Ursæ Min. s	4	5 51.28	-6.580	7	7 40 13.2	4.691	16
2423	..	..	30	..	..	..	.....	7	5 55.18	+0.685	6	28 36 4.2	4.686	6
2424	..	..	..	..	..	..	.....	7	6 23.99	-1.953	6	14 30 50.1	4.645	6
2425	..	..	..	..	..	..	.....	7	6 36.58	+1.814	6	46 2 28.3	4.627	6
2426	..	..	..	..	..	..	.....	7	7 4.86	+2.007	5	50 47 11.1	4.587	5
2427	..	..	..	..	..	..	.....	6	7 44.28	-1.985	6	14 26 45.5	4.531	6
2428	22	2193	42	v. 38	726	..	22 Draconis ζ	3	8 15.23	+0.150	6	24 3 3.4 3.9	4.487	17 38
2429	..	..	..	..	..	..	.....	8	9 44.79	-2.998	3	12 8 6.0	4.360	3
2430	..	..	61	..	..	..	.....	5.6	10 54.77	+0.495	6	26 54 26.2	4.261	6
2431	..	..	..	..	..	..	.....	6.7	12 0.71	2.009	7	50 59 13.4	4.167	7
2432	..	..	..	..	..	..	.....	7	13 46.82	0.714	5	29 4 53.4	4.015	5
2433	..	..	..	..	..	..	.....	6.7	14 12.01	0.717	5	29 7 30.6	3.979	5
2434	32	2203	87	..	..	..	74 Herculis	6	14 59.44	1.690	6	43 34 2.4	3.911	6
2435	..	..	..	..	..	..	.....	6	15 29.67	1.961	7	49 49 54.5	3.869	7
2436	..	..	..	..	..	..	.....	6.7	17 38.84	+2.013	6	51 14 21.8	3.684	6
2437	..	..	..	..	..	..	.....	6	19 12.37	-0.977	7	18 0 48.9	3.585	7
2438	..	..	..	..	..	..	.....	7	21 15.40	-0.751	7	19 1 48.3	3.373	7
2439	..	..	..	..	..	..	.....	7	21 40.96	-0.539	6	20 3 57.9	3.336	6
2440	35	2211	130	..	..	..	77 Herculis x	6	21 42.19	+1.583	6	41 34 31.7	3.334	6
2441	..	..	..	..	..	..	.....	7	22 50.80	-0.550	6	20 1 35.0	3.235	6
2442	..	..	..	..	..	..	.....	6	24 19.68	+1.998	6	50 58 7.5	3.108	6
2443	23	2221	155	..	742	408	23 Draconis β	3	26 8.51	1.349	11	37 33 11.6 11.4	2.951	62 101
2444	..	..	..	..	..	..	.....	6	27 5.84	1.903	6	48 36 56.0	2.868	6
2445	24	2222	168	..	746	410	24 Draconis γ ¹	4	29 26.22	1.154	3	34 40 54.6	2.665	5
2446	24	2224	169	..	747	411	25 Draconis γ ²	4	29 31.64	1.155	3	34 41 36.5	2.657	5
2447	..	..	189	..	..	..	.....	8	31 33.92	1.565	2	41 24 56.0	2.481	2
2448	36	2227	190	82 Herculis γ	6	31 40.02	1.558	7	41 17 55.9	2.472	7
2449	7.8	31 51.98	1.833	4	47 3 1.4	2.455	4
2450	7	17 32 20.40	+1.800	6	46 17 9.3	+2.413	6

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2451	..	2234	198	iv.26	749	..	27 Draconis <i>f</i>	5	^h 17 ^m 32 ^s 44.68	—0.259	6	21° 44' 41".3	+2.378	6
2452	201	26 Draconis	6	33 1.79	+0.570	6	27 58 41.9	2.354	6
2453	206	..	..	..	.....	6.7	33 32.38	0.509	7	27 25 12.7	2.309	7
2454	7	33 51.67	1.781	6	45 53 36.2	2.281	6
2455	37	2233	211	..	751	..	85 Herculis <i>t</i>	4	34 6.19	+1.688	3	43 53 ^{12.3} 12.8}	2.260	⁶ 18}
2456	7	34 8.95	—4.691	6	9 42 40.2	2.256	5
2457	6	34 52.63	+1.804	6	46 25 48.0	2.193	6
2458	7	35 15.35	1.882	5	48 14 43.7	2.160	5
2459	6	37 27.78	+1.776	6	45 49 36.5	1.968	6
2460	..	2240	242	iii.44	..	..	29 Draconis	7	37 56.68	—1.677	6	15 39 40.1	1.926	6
2461	25	2238	241	iv.28	754	415	28 Draconis <i>ω</i>	4	38 4.14	—0.369	9	21 9 21.2	1.915	16
2462	7.8	38 33.89	+1.946	3	49 51 19.9	1.872	3
2463	8	38 50.94	1.988	3	50 55 27.9	1.847	3
2464	6.7	39 34.38	1.992	7	51 2 15.1	1.784	7
2465	7	39 42.16	1.975	6	50 35 57.2	1.773	6
2466	262	..	..	..	.....	7	41 47.71	1.949	5	49 57 22.3	1.590	5
2467	B. F. 2433	7	42 2.28	1.605	5	42 19 1.3	1.569	5
2468	8	42 12.51	1.953	2	50 4 40.9	1.554	2
2469	7.8	42 23.95	1.773	5	45 49 35.5	1.537	5
2470	7	42 53.16	1.606	5	42 20 51.9	1.495	5
2471	8	44 3.12	1.867	4	47 58 59.5	1.390	4
2472	..	2243	278	..	..	419	30 Draconis <i>s</i>	5.6	44 31.90	1.431	6	39 10 10.0	1.352	6
2473	280	..	..	..	.....	6.7	45 4.08	1.944	5	49 52 24.2	1.305	5
2474	39?	2244	282	..	..	..	88 Herculis <i>z</i>	6	45 5.32	+1.563	12	41 32 57.6	1.303	12
2475	..	2251	286	iii.45	758	417	31 Draconis <i>ψ</i> ¹	4	45 20.32	—1.095	3	17 45 41.7	1.282	5
2476	7	45 20.33	—8.564	7	6 32 24.1	1.282	7
2477	..	2252	287	iii.46	759	418	B. F. 2459	..	45 22.04	—1.098	3	17 45 10.9	1.279	4
2478	39?	..	288	..	..	..	Herculis	8	45 49.45	+1.563	3	41 32 58.1	1.239	3
2479	..	2248	295	..	..	..	90 Herculis <i>f</i>	5.6	45 54.09	1.948	6	49 58 10.1	1.233	6
2480	7.8	46 20.85	1.828	5	47 5 32.3	1.194	5
2481	6.7	46 45.42	1.652	5	43 18 4.3	1.157	5
2482	7.8	46 56.48	1.661	4	43 28 25.8	1.141	4
2483	7	47 3.46	1.856	5	47 44 29.5	1.131	5
2484	6	47 7.19	1.946	6	49 56 56.9	1.126	6
2485	7.8	17 48 11.46	+1.837	4	47 18 43.4	+1.032	4

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2486	306	7.8	^h 17 ^m 49 ^s 14.22	+1.705	2	44° 24' 35".2	+0".941	2
2487	7.8	49 16.47	1.721	2	44 44 47.5	0.938	2
2488	26	2263	316	..	764	..	32 Draconis ζ	3	50 14.70	1.020	4	33 5 38.57 38.3}	0.853	111 69}
2489	8	50 46.90	1.388	2	38 28 15.9	0.806	2
2490	327	..	..	..	.....	7	51 12.90	1.732	7	44 59 5.5	0.768	7
2491	6.7	51 21.62	1.715	6	44 37 12.5	0.756	6
2492	27	2267	335	..	771	420	33 Draconis γ	2.3	52 11.81	1.388	26	38 29 2.67 3.3}	0.683	103 137}
2493	6	52 13.18	1.803	6	46 33 38.7	0.681	6
2494	7	53 26.68	1.709	6	44 30 28.2	0.573	6
2495	7.8	54 10.99	1.516	3	40 43 24.8	0.509	3
2496	353	..	..	..	.....	6	54 30.99	1.708	6	44 29 3.3	0.479	6
2497	8	55 40.54	1.715	3	44 38 32.4	0.378	3
2498	8.9	56 36.83	1.778	3	46 0 52.0	0.296	3
2499	7.8	56 45.25	1.810	6	46 43 50.2	0.284	6
2500	7.8	56 54.88	+1.767	6	45 45 42.9	0.269	6
2501	..	2287	380	ii. 39	777	422	35 Draconis	6	57 58.17	-2.710	6	13 1 15.5	0.178	6
2502	5	58 11.11	+1.560	6	41 32 21.3	0.159	6
2503	7.8	58 22.46	+1.861	2	47 54 42.7	0.142	2
2504	..	2285	382	iii. 47	..	..	34 Draconis ↓ ²	7	58 29.08	-1.049	4	17 58 50.3	0.132	5
2505	6.7	58 32.59	+1.944	6	49 55 28.6	0.127	6
2506	379	..	..	..	.....	7	58 41.12	1.828	6	47 8 48.2	0.115	6
2507	384	..	..	..	.....	7	59 1.02	1.824	6	47 3 6.1	0.086	6
2508	6.7	59 5.48	1.868	6	48 4 6.6	0.079	6
2509	8	59 31.50	1.986	3	51 0 48.7	0.041	3
2510	7.8	17 59 56.46	1.577	4	41 52 30.8	+0.005	4
2511	8.9	18 0 9.49	1.575	2	41 50 12.9	-0.014	2
2512	7.8	0 22.48	1.933	5	49 39 17.4	0.033	5
2513	7	0 39.04	1.513	7	40 40 13.1	0.056	7
2514	8	1 4.46	1.803	3	46 33 54.6	0.094	3
2515	7.8	1 20.09	1.506	6	40 33 7.6	0.116	6
2516	7.8	1 22.51	1.503	5	40 29 45.7	0.120	5
2517	6	1 45.43	1.802	6	46 33 24.2	0.154	6
2518	6.7	2 21.83	1.493	5	40 18 45.7	0.206	5
2519	8	2 24.87	1.984	3	50 57 43.0	0.211	3
2520	7	18 2 43.58	+1.774	5	45 54 52.6	-0.238	5

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2521	7.8	^h 18 ^m 3 ^s 11.04	+1.799	4	46° 28' 0".2	-0".278	4
2522	7.8	3 59.50	1.984	3	50. 57. 24.9	0.349	3
2523	7	4 12.27	1.028	5	33. 13. 44.3	0.368	5
2524	7	4 35.51	1.989	5	51. 4. 30.4	0.401	5
2525	7	4 54.98	1.984	5	50. 56. 13.3	0.430	5
2526	6.7	5 41.55	0.935	6	32. 3. 11.7	0.498	6
2527	5.6	6 37.84	1.214	6	35. 45. 58.3	0.580	6
2528	6	6 38.44	1.071	5	33. 46. 22.2	0.581	5
2529	6.7	6 40.52	1.903	6	48. 53. 44.1	0.584	6
2530	6	6 44.74	1.997	6	51. 16. 22.7	0.590	6
2531	8	7 40.08	1.529	3	40. 56. 46.2	0.671	3
2532	7.8	7 44.50	1.810	4	46. 42. 56.0	0.677	4
2533	6	9 44.47	+1.862	6	47. 53. 57.5	0.851	6
2534	7	9 49.35	-2.192	6	14. 14. 28.6	0.858	6
2535	6.7	10 5.21	+1.726	5	44. 50. 37.7	0.882	5
2536	7	10 5.28	1.527	6	40. 54. 13.1	0.882	6
2537	8	10 57.82	1.940	2	49. 48. 35.5	0.959	2
2538	5	11 5.34	1.913	7	49. 7. 56.3	0.970	7
2539	6	11 20.82	1.050	6	33. 28. 25.2	0.992	6
2540	7	11 39.37	1.939	5	49. 45. 55.1	1.019	5
2541	7	11 57.28	1.282	5	36. 46. 12.1	1.045	5
2542	7.8	12 2.55	1.531	4	40. 58. 23.5	1.053	4
2543	..	2309	54	v. 39	791	425	36 Draconis	5	12 47.31	0.291	6	25. 39. 57.5	1.117	6
2544	7	12 59.03	1.670	5	43. 39. 49.7	1.134	5
2545	7.8	14 1.78	+1.561	4	41. 30. 46.3	1.226	4
2546	..	2318	62	ii. 40	788	..	40 Draconis	5	14 17.75	-4.465	5	10. 2. 20.0	1.250	8
2547	..	2321	63	ii. 41	789	..	41 Draconis	5	14 24.21	-4.467	5	10. 2. 8.5	1.259	8
2548	8	14 51.76	-8.494	6	6. 34. 46.4	1.299	6
2549	5.6	15 28.61	+1.406	6	38. 43. 54.5	1.352	6
2550	7	15 49.69	1.904	5	48. 52. 18.0	1.383	5
2551	8	16 5.45	1.859	3	47. 47. 58.2	1.406	3
2552	8	16 13.92	1.938	2	49. 42. 56.6	1.418	2
2553	6	16 21.54	+1.500	6	40. 21. 45.1	1.429	6
2554	..	2316	67	iv. 30	37 Draconis	6	16 23.20	-0.348	5	21. 18. 51.4	1.432	5
2555	5	18 16.40.97	+1.533	6	40. 58. 11.2	-1.457	6

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2556	6	^h 18 ^m 17 ^s 0.47	+1.410	4	38° 47' 12.4	-1.486	5
2557	7.8	17 11.78	1.788	3	46 9 37.8	1.502	3
2558	7	17 40.28	1.675	6	43 44. 7.0	1.543	6
2559	6.7	17 45.66	1.396	6	38 32. 59.2	1.551	6
2560	2	2315	78	..	..	..	2 Lyræ μ	5.6	17 58.51	+1.973	6	50 35 23.4	1.570	6
2561	..	2322	80	iv.31	..	..	38 Draconis	6	18 4.55	-0.343	6	21 20 4.9	1.579	6
2562	7.8	18 7.24	+1.163	4	34 57 43.5	1.583	4
2563	6.7	18 17.98	1.853	6	47 37 47.9	1.598	6
2564	7	18 18.72	1.790	5	46 11 22.2	1.599	5
2565	7	19 18.68	1.213	5	35 40. 33.2	1.687	5
2566	8.9	19 21.01	1.989	4	50 58 54.0	1.690	4
2567	8	19 40.19	1.681	2	43 50 6.5	1.718	2
2568	8.9	20 24.85	1.988	4	50 57 10.6	1.783	4
2569	7	20 27.43	1.495	5	40 14 16.1	1.787	5
2570	28	2328	98	..	795	..	39 Draconis δ	5	21 8.11	0.880	4	31 18 24.1	1.846	5
2571	8	21 21.62	1.692	3	44 2 15.9	1.865	3
2572	8	21 53.18	1.371	2	38 5 33.2	1.911	2
2573	7.8	22 12.25	1.373	5	38 6 50.5	1.939	5
2574	8	22 27.97	1.693	3	44 3 0.3	1.962	3
2575	7.8	22 29.42	1.792	4	46 11 26.4	1.964	4
2576	8.9	22 35.73	1.783	3	45 59 10.2	1.973	3
2577	8	22 40.17	1.778	3	45 51 39.6	1.979	3
2578	7	22 41.33	1.500	9	40 18 2.5	1.980	9
2579	7.8	23 13.08	1.186	4	35 13 57.5	2.027	4
2580	7.8	23 21.53	+1.793	5	46 11 21.2	2.039	5
2581	29	2334	113	iii.48	796	..	43 Draconis ϕ	5	23 27.94	-0.844	10	18 45 58.2	2.048	28
2582	7	23 42.07	+1.250	5	36 10 0.2	2.069	5
2583	7.8	24 0.20	1.699	9	44 8 29.3	2.095	9
2584	6	24 5.75	0.804	6	30 24 41.2	2.103	6
2585	7	24 20.23	+1.378	5	38 10 31.8	2.124	5
2586	31	2337	119	iii.49	797	428	44 Draconis χ	4	24 27.48	-1.184	7	17 21 10.1	2.135	14
2587	7	24 27.75	+1.919	5	49 9 0.6	2.135	5
2588	7.8	24 39.07	1.939	5	49 38 9.7	2.152	5
2589	7	24 53.90	1.914	5	49 1 23.8	2.173	5
2590	6	18 25 5.20	+0.820	6	30 34 28.5	-2.189	6

GROOMBRIDGE'S CATALOGUE OF CIRCUMPOLAR STARS.

No.	Hevelius.	Bessel's Bradley.	Piazzi.	Wollaston.	Pond.	Argelander.	Flamsteed's No. and Bayer's Character.	Magnitude.	Right Ascension. Jan. 1, 1810.	Annual Precession.	No. of Obs.	North Polar Distance. Jan. 1, 1810.	Annual Precession.	No. of Obs.
2591	8	18 ^h 25 ^m 24 ^s .44	+1.944	3	49° 45' 46".5	-2".217	3
2592	..	2336	124	v. 40	..	429	42 Draconis	6	25 26:18	0.161	6	24 33 13.3	2.220	6
2593	8	25 55:13	1.791	4	46 6 47.3	2.262	4
2594	7	26 21:10	1.700	9	44 8 45.1	2.299	9
2595	126	..	..	..	.....	8	26 21:44	2.003	2	51 16 18.7	2.300	2
2596	127	..	..	..	.....	7.8	26 29:72	2.005	2	51 17 56.4	2.312	2
2597	7	26 55:27	1.711	9	44 21 46.0	2.349	9
2598	7	26 58:79	1.939	5	49 36 22.9	2.354	5
2599	8	27 7:54	1.789	4	46 3 8.7	2.367	4
2600	7	27 14:84	1.696	9	44 2 44.8	2.378	9
2601	6	27 50:44	1.372	7	38 1 23.2	2.429	7
2602	9	28 24:78	1.768	2	45 34 38.6	2.479	2
2603	7	28 25:52	1.691	9	43 55 28.9	2.480	9
2604	8.9	28 47:04	0.824	2	30 34 13.3	2.511	2
2605	9	28 52:62	1.774	2	45 41 35.0	2.519	2
2606	7.8	28 59:80	0.230	5	25 2 15.7	2.530	5
2607	..	2339	137	..	..	..	.....	7	29 0:19	2.004	5	51 15 11.8	2.530	5
2608	7.8	29 15:20	0.838	4	30 43 10.4	2.552	4
2609	30	2340	139	..	..	..	45 Draconis <i>d</i>	5	29 17:84	1.035	5	33 5 48.3	2.555	5
2610	8	29 26:17	1.949	4	49 49 5.6	2.567	4
2611	8	29 29:30	1.931	3	49 22 50.0	2.572	3
2612	5	29 37:65	1.359	6	37 47 36.0	2.584	6
2613	8	29 37:69	0.534	4	27 36 17.1	2.584	4
2614	8	29 50:75	1.434	3	39 2 9.4	2.601	3
2615	7.8	30 5:50	1.837	5	47 5 45.4	2.624	5
2616	3	2341	143	..	799	431	3 Lyræ <i>α</i>	1	30 30:14	2.010	..	51 23 12.5 12.8	2.660	48 78
2617	7.8	30 40:13	0.190	5	24 42 36.8	2.674	5
2618	7	30 56:66	1.830	5	46 55 59.9	2.698	5
2619	9	31 1:07	1.780	2	45 48 4.7	2.704	2
2620	8.9	31 4:83	1.851	3	47 24 59.2	2.710	3
2621	9	31 7:01	1.778	2	45 44 29.1	2.713	2
2622	7.8	31 19:95	0.200	1	24 46 35.9	2.732	1
2623	153	6	31 50:12	1.977	6	50 29 36.2	2.776	6
2624	8	32 3:91	1.855	3	47 29 57.9	2.796	3
2625	7.8	18 33 3.64	+1.204	5	35 20 50.3	-2.881	5

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2626	9	^h 18 ^m 33 ^s 21.08	+ 1.762	2	45° 21' 19".3	-2".906	2
2627	6	33 25.61	+ 1.928	6	49 13 58.2	2.913	6
2628	11	2395	178	i. 36	798	..	23 Ursæ Min. δ	3	33 28.63	-18.993	20	3 25 47.5	2.917	28
2629	160	..	..	..	.....	6	33 45.65	+ 2.028	5	51 48 11.9	2.942	5
2630	7.8	33 53.14	0.411	2	26 26 57.2	2.953	2
2631	8.9	34 15.98	1.840	3	47 5 15.7	2.986	3
2632	6.7	34 30.90	1.366	6	37 49 27.9	3.007	6
2633	8.9	34 31.00	1.838	4	47 2 48.4	3.007	4
2634	..	2348	..	..	..	..	.....	7	34 47.72	1.176	6	34 55 36.8	3.031	6
2635	8.9	34 52.66	1.845	3	47 12 42.5	3.038	3
2636	8	35 16.76	1.948	2	49 42 12.5	3.072	2
2637	7	35 23.02	1.789	6	45 54 18.3	3.082	6
2638	170	..	..	..	.....	6	35 30.55	1.376	7	37 58 43.3	3.093	7
2639	6.7	35 31.44	1.939	6	49 27 27.5	3.094	6
2640	173	..	..	..	.....	7	35 36.87	0.195	7	24 40 52.5	3.102	7
2641	174	..	..	..	.....	6.7	35 50.12	0.548	5	27 38 40.8	3.122	5
2642	6	36 5.47	0.732	6	29 27 47.8	3.144	6
2643	36 46.53	2.031	3	51 48 51.7	3.202	3
2644	6.7	36 56.69	1.996	5	50 53 2.3	3.217	5
2645	6.7	37 2.26	0.439	6	26 38 30.1	3.225	6
2646	7.8	37 20.43	1.761	4	45 15 29.7	3.251	4
2647	7	37 38.78	1.635	5	42 36 42.5	3.277	5
2648	182	..	..	..	.....	7	37 39.68	2.025	5	51 39 19.7	3.279	5
2649	190	..	..	..	.....	8	38 1.61	0.411	2	26 23 5.7	3.310	2
2650	4	2355	183	..	804	433	4 Lyræ s	5	38 2.61	1.982	6	50 31 19.1	3.312	6
2651	4	2356	184	..	805	434	5 Lyræ	5.6	38 4.82	1.985	6	50 34 47.4	3.315	6
2652	7	38 43.17	1.634	5	42 34 19.1	3.371	5
2653	38 44.01	2.034	3	51 52 29.6	3.372	3
2654	8	38 47.22	+ 1.765	4	45 18 9.2	3.376	4
2655	5.6	38 49.98	- 2.820	6	12 36 40.2	3.380	6
2656	7.8	38 52.07	+ 1.812	5	46 21 29.3	3.383	5
2657	32	2360	195	..	807	..	46 Draconis c	5	38 57.15	1.162	4	34 38 57.1	3.391	6
2658	6	39 15.97	0.532	6	27 26 16.2	3.418	6
2659	7	39 26.07	1.277	5	36 19 3.6	3.432	5
2660	8.9	18 39 36.98	+ 1.915	3	48 47 26.9	-3.448	3

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2661	8	^h 18 ^m 39 ^s 38.69	+ 1.696	3	43° 48' 34".6	- 3".450	2
2662	8.9	39 57.10	2.035	2	51. 52. 37.2	3.477	2
2663	8.9	40 7.23	2.034	3	51 50 38.4	3.491	3
2664	6	40 8.56	1.914	6	48 45 23.5	3.493	6
2665	8.9	40 31.56	1.815	2	46 22 57.4	3.526	2
2666	7	40 40.67	+ 1.826	5	46 38. 20.6	3.539	5
2667	..	2417	227	..	..	..	24 Ursæ Min.	6	40 44.40	- 21.570	11	3 3 32.8	3.544	21
2668	8.9	40 49.21	+ 2.035	2	51 50 29.7	3.551	2
2669	7	41 35.15	1.702	5	43 53 14.8	3.617	5
2670	..	2370	..	..	..	..	.....	6	42 3.36	0.711	6	29 9 4.8	3.658	6
2671	5	42 27.99	1.339	6	37 12 59.2	3.693	6
2672	6	42 35.28	1.545	6	40 46 28.1	3.703	6
2673	9	42 38.65	1.972	2	50 8 51.5	3.708	2
2674	8.9	42 59.56	1.952	2	49 38 12.9	3.738	2
2675	7	43 2.01	1.753	5	44 57 10.0	3.742	5
2676	7.8	43 10.57	2.034	6	51 47 10.3	3.754	6
2677	5.6	43 15.08	1.582	6	41 26 43.3	3.760	6
2678	7	43 33.88	1.822	5	46 28 49.8	3.788	5
2679	8.9	43 33.99	1.751	2	44 53 24.8	3.788	2
2680	8	43 39.50	1.947	4	49 28 39.9	3.795	4
2681	8.9	43 47.76	0.739	3	29 23 30.2	3.807	3
2682	7.8	44 18.79	2.001	4	50 52 40.1	3.852	4
2683	8.9	44 30.83	1.917	2	48 42 37.9	3.869	2
2684	8.9	44 31.51	0.749	2	29 28 49.0	3.870	2
2685	7	44 37.25	1.858	5	47 18 24.2	3.878	5
2686	7.8	44 53.71	2.029	9	51 35 46.9	3.902	9
2687	7	44 58.23	1.814	5	46 15 46.2	3.908	5
2688	7.8	45 5.41	2.003	4	50 54 5.6	3.919	4
2689	9	45 14.39	1.961	2	49 49 9.8	3.931	2
2690	7.8	45 43.46	1.920	4	48 45 30.4	3.973	4
2691	8	45 45.60	1.455	3	39 4 33.0	3.976	3
2692	7	45 54.21	1.762	4	45 5 22.5	3.988	4
2693	6.7	46 1.43	1.923	6	48 50 29.4	3.998	6
2694	7	46 22.01	1.261	7	35 55 13.1	4.027	7
2695	235	8	18 46 29.46	+ 1.827	4	46 30. 57.5	- 4.038	4

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2696	7.8	^h 18 ^m 46 ^s 49.12	+1.461	4	39° 9' 36.0	-4.066	4
2697	7	47 9.56	1.940	5	49 14 10.2	4.096	5
2698	244	7	47 12.32	1.827	4	46 30 50.0	4.100	4
2699	5	47 19.04	1.349	6	37 15 57.1	4.109	6
2700	8	47 29.62	1.861	2	47 17 45.7	4.124	2
2701	6.7	47 33.61	1.863	5	47 19 41.9	4.130	5
2702	7	47 37.50	1.343	3	37 9 37.6	4.136	3
2703	8	47 39.67	1.967	3	49 54 35.9	4.139	3
2704	8	47 43.93	1.810	4	46 6 19.7	4.145	4
2705	7	47 57.37	0.747	5	29 23 19.7	4.164	5
2706	7.8	48 5.95	1.932	8	49 0 34.8	4.176	8
2707	33	2386	249	..	818	..	47 Draconis	4	48 23.20	+0.880	11	30 50 28.5	4.201	15
2708	6	48 29.15	-7.893	4	6 47 50.8	4.209	4
2709	6	48 31.01	+1.484	6	39 31 25.5	4.212	6
2710	8	48 33.18	1.487	4	39 34 29.2	4.215	4
2711	6	48 46.98	+1.918	6	48 38 4.8	4.235	6
2712	..	2412	..	..	..	..	.....	..	48 54.93	-7.591	6	6 59 30.8	4.246	6
2713	8	49 3.93	+1.976	3	50 6 3.0	4.259	3
2714	8.9	49 4.88	0.746	3	29 20 52.1	4.260	3
2715	7	49 9.72	1.975	6	50 3 44.8	4.267	6
2716	9	49 30.96	1.974	2	50 2 18.2	4.297	2
2717	9	2389	252	..	..	..	13 Lyræ	5	49 33.14	1.821	6	46 17 55.8	4.300	6
2718	254	..	..	..	.....	6	49 46.44	+1.586	6	41 22 25.0	4.319	6
2719	iii.50	819	..	B. F. 2577	5	50 27.70	-1.438	6	16 8 23.9	4.378	6
2720	6	50 27.82	+1.041	6	32 45 6.1	4.378	6
2721	8	51 25.21	1.901	2	48 8 19.8	4.460	2
2722	7	51 32.26	1.757	5	44 23 36.5	4.470	5
2723	7.8	51 52.47	1.739	4	44 25 4.4	4.498	4
2724	268	..	..	..	.....	7.8	51 59.43	1.999	4	50 36 33.9	4.508	4
2725	270	..	..	..	.....	7.8	52 7.58	+1.994	4	50 28 29.0	4.520	4
2726	..	2404	279	ii.42	821	..	50 Draconis	5	52 25.66	-1.859	4	14 47 48.3	4.545	9
2727	6	52 33.47	+1.960	6	49 34 32.1	4.557	6
2728	6	52 48.59	2.016	6	51 2 20.6	4.578	6
2729	7.8	53 5.69	0.751	5	29 18 9.9	4.602	5
2730	8	18 53 15.62	+1.922	4	48 37 11.2	-4.616	4

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2731	..	2400	281	..	824	..	48 Draconis	6	18 ^h 53 ^m 31 ^s ·86	+1 ^s ·022	6	32° 26' 2 ^o ·9	-4 ^o ·639	6
2732	7	53 58·31	0·611	5	27 52 9·6	4·677	5
2733	7	54 2·12	1·570	10	40 56 20·9	4·682	10
2734	8	54 2·21	2·013	2	50 55 36·2	4·682	2
2735	6·7	54 5·44	1·961	6	49 34 37·2	4·687	6
2736	7·8	54 14·64	1·994	5	50 25 3·1	4·700	5
2737	7·8	54 16·42	1·993	5	50 23 47·0	4·702	5
2738	287	..	..	..	.....	7	54 19·77	0·992	5	32 1 57·9	4·707	5
2739	7·8	54 25·99	1·922	5	48 34 41·6	4·716	5
2740	6·7	54 48·87	1·899	6	48 0 17·5	4·748	6
2741	7·8	55 1·74	1·934	4	48 51 3·2	4·766	4
2742	5·6	55 21·27	0·613	7	27 51 32·1	4·794	7
2743	7	55 33·41	1·931	5	48 46 43·8	4·811	5
2744	7·8	55 37·53	1·810	4	45 52 53·1	4·817	4
2745	6	55 54·71	1·639	6	42 13 49·8	4·842	6
2746	12	..	299	..	..	..	16 Lyræ	5·6	56 3·58	1·694	12	43 19 45·1	4·854	12
2747	8·9	56 5·44	+1·257	4	35 36 33·9	4·857	4
2748	34	2411	308	iii.51	827	..	52 Draconis ν	5	56 40·68	-0·704	9	18 57 33·3	4·907	18
2749	8	56 46·43	+1·993	4	50 19 13·6	4·915	4
2750	..	2408	307	..	..	..	49 Draconis	6	56 57·67	1·191	6	34 36 36·6	4·931	6
2751	8	57 19·34	+1·996	3	50 21 55·3	4·961	3
2752	7·8	57 38·76	-1·401	5	16 10 7·5	4·980	5
2753	6	57 39·03	+1·412	6	38 0 39·0	4·989	6
2754	8	57 43·83	1·988	3	50 9 38·9	4·986	3
2755	8·9	58 2·00	1·930	3	48 39 31·2	5·022	3
2756	8	58 42·43	1·938	3	48 51 6·6	5·078	3
2757	8·9	58 46·91	1·989	2	50 9 24·8	5·085	2
2758	7·8	58 49·33	1·563	4	40 38 48·6	5·088	4
2759	7	59 0·28	1·747	5	44 21 39·0	5·103	5
2760	9	59 8·43	1·939	1	48 51 47·9	5·115	1
2761	6·7	59 24·78	0·844	6	30 9 0·8	5·138	6
2762	325	..	..	..	.....	7	59 51·08	+1·284	5	35 53 32·9	5·175	5
2763	..	2421	7	59 51·78	-1·941	5	14 28 24·7	5·177	5
2764	8	18 59 55·63	+2·057	6	51 55 59·3	5·182	6
2765	7·8	19 0 7·45	+1·941	5	48 52 27·0	-5·198	5

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2766	328	7	^h 19 ^m 0 ^s 15.20	+1.550	6	40° 21' 48".9	-5".209	6
2767	8.9	0 28.37	1.938	1	48 46 27.6	5.228	1
2768	.,	2416	3	..	831	..	51 Draconis	5.6	0 38.74	1.350	5	36 53 27.6	5.242	7
2769	7	1 6.50	1.957	6	49 14 19.2	5.281	6
2770	8	..	..	..	.....	6.7	1 19.55	2.038	6	51 21 59.0	5.300	6
2771	6	1 23.17	0.664	6	28 11 24.7	5.305	6
2772	7	1 24.79	1.866	5	46 58 49.2	5.307	5
2773	8	1 26.25	1.816	3	45 49 20.2	5.309	3
2774	11	..	..	..	.....	6.7	1 46.66	+2.030	5	51 8 30.4	5.338	5
2775	7	3 7.10	-1.375	5	16 8 34.5	5.451	5
2776	8	3 38.94	+1.539	3	40 2 42.2	5.495	3
2777	7	3 41.88	1.533	6	39 56 17.6	5.500	6
2778	6.7	3 58.42	1.416	5	37 52 22.3	5.523	5
2779	7.8	4 12.26	1.226	4	34 53 13.6	5.542	4
2780	27	..	..	..	19 Lyræ	7	4 23.22	2.033	5	51 8 14.8	5.557	5
2781	7	4 26.10	1.233	5	34 58 22.0	5.561	5
2782	6.7	5 4.77	1.987	6	49 52 49.5	5.616	6
2783	7	5 15.64	+1.637	3	41 51 52.0	5.630	3
2784	..	2440	38	ii.44	..	..	.....	6	5 47.09	-2.385	6	13 13 42.7	5.675	6
2785	7	6 4.72	+1.957	5	49 4 33.9	5.700	5
2786	8	6 46.07	1.235	4	34 56 4.0	5.757	4
2787	7	6 53.61	1.693	5	42 56 29.1	5.768	5
2788	8	7 8.60	1.997	1	50 4 39.6	5.789	1
2789	6	7 9.47	1.570	5	40 29 46.7	5.790	5
2790	14	2427	45	..	835	..	20 Lyræ	6	7 17.51	2.039	12	51 10 29.4	5.801	12
2791	..	2433	52	..	836	..	53 Draconis	5	8 4.53	1.135	4	33 27 39.6	5.866	9
2792	8	8 14.20	1.960	2	49 3 51.5	5.880	2
2793	8	8 27.18	1.245	3	35 0 35.5	5.898	3
2794	7	8 39.87	1.649	4	41 58 26.9	5.915	4
2795	6.7	8 55.49	1.992	1	49 52 49.8	5.937	1
2796	..	2443	63	v. 41	..	..	55 Draconis	6	9 1.98	0.247	6	24 20 20.4	5.946	6
2797	7.8	9 15.70	1.799	5	45 9 10.7	5.966	5
2798	7	9 16.09	1.631	5	41 36 22.3	5.966	5
2799	8	9 18.38	1.382	3	37 6 44.0	5.969	3
2800	6	19 9 24.73	+1.996	12	49 58 2.2	-5.978	11

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2801	7	19 ^h 9 ^m 44 ^s .95	+1.793	5	44° 59' 37".9	-6".007	5
2802	6	10 21.70	1.564	6	40 15 36.0	6.058	6
2803	8.9	10 27.77	1.715	2	43 16 8.9	6.066	2
2804	..	2444	74	..	840	..	54 Draconis	5	10 30.97	1.078	5	32 37 9.9	6.071	7
2805	7	10 54.99	1.964	5	49 4 14.4	6.104	5
2806	8	11 12.20	1.262	2	35 9 43.1	6.127	2
2807	7.8	11 16.26	1.654	4	41 58 39.8	6.132	4
2808	7.8	11 17.95	1.600	2	40 54 39.6	6.136	2
2809	6.7	11 24.15	1.721	5	43 21 9.2	6.144	5
2810	8.9	11 26.83	1.711	2	43 9 16.8	6.148	2
2811	19	2449	90	iv.32	842	440	57 Draconis δ	3.4	12 28.45	0.028	6	22 40 22.0	6.234	6
2812	6	12 37.04	2.002	6	49 59 1.7	6.245	6
2813	1	2447	91	..	843	..	1 Cygni α	4	12 42.30	1.382	10	36 58 40.6 } 39.8 }	6.252	49 } 87 }
2814	7	13 16.16	2.007	3	50 4 46.0	6.299	3
2815	6	13 33.73	1.598	6	40 46 40.8	6.323	6
2816	8	13 54.36	1.340	2	36 53 14.0	6.351	2
2817	8	14 0.05	1.383	2	36 57 8.4	6.360	2
2818	7	14 2.32	2.021	5	50 25 24.6	6.363	5
2819	101	..	..	..	.....	8	14 16.91	0.576	2	26 56 55.4	6.383	2
2820	7.8	14 58.89	1.915	3	47 39 52.5	6.441	3
2821	108	..	..	..	.....	6	15 0.14	0.599	10	27 8 11.7	6.443	10
2822	5.6	15 24.20	1.326	6	35 58 25.3	6.476	6
2823	8	15 31.16	1.389	2	36 59 22.1	6.486	2
2824	7	15 34.13	+1.562	1	40 0 54.1	6.490	1
2825	..	2466	119	ii.45	..	..	59 Draconis	6	16 1.98	-2.090	6	13 45 46.9	6.529	6
2826	9	16 3.56	+1.111	1	32 51 9.1	6.531	1
2827	6	16 46.63	1.103	6	32 42 40.7	6.590	6
2828	7	16 57.19	1.907	5	47 23 15.0	6.605	5
2829	6.7	16 59.90	1.452	6	37 59 1.5	6.609	6
2830	8	17 27.38	1.766	4	44 4 22.8	6.647	4
2831	7.8	17 40.11	2.053	4	51 9 8.4	6.664	4
2832	6	17 56.07	1.892	6	46 58 35.8	6.686	6
2833	6.7	17 56.70	1.098	11	32 35 46.6	6.687	11
2834	7	18 13.93	1.828	4	45 26 6.9	6.710	4
2835	6.7	19 18 16.34	+0.483	6	25 58 3.2	-6.713	6

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2836	131	6	19 ^h 18 ^m 24 ^s ·83	+1·573	7	40 ^o 5 ['] 44 ["] ·7	-6 ["] ·725	7
2837	7·8	18 30·29	1·761	4	43 55 45·8	6·733	4
2838	8	18 49·26	1·889	1	46 50 47·6	6·758	1
2839	7	18 52·68	+1·291	5	35 17 49·7	6·763	5
2840	36	2472	141	iii. 52	846	..	60 Draconis τ	4	19 7·55	-1·045	6	17 0 5·1	6·783	10
2841	140	..	..	..	.....	6·7	19 33·34	+1·577	6	40 7 44·1	6·819	6
2842	35	2471	142	v. 42	847	444	58 Draconis π	4	19 39·68	0·330	12	24 39 1·9	6·828	15
2843	8·9	19 56·33	1·939	3	48 3 5·8	6·851	3
2844	7	20 8·74	1·832	6	45 26 25·0	6·868	6
2845	6·7	20 13·28	1·829	6	45 21 44·6	6·874	6
2846	7·8	20 17·79	2·030	5	50 24 56·6	6·880	5
2847	8	20 51·08	1·278	3	35 1 8·4	6·927	3
2848	8	21 14·21	1·945	2	48 9 0·8	6·957	2
2849	154	..	..	..	.....	7·8	21 45·63	1·588	1	40 14 17·9	6·998	1
2850	7	21 54·49	1·312	5	35 29 34·1	7·013	5
2851	7	22 11·28	2·034	5	50 26 39·7	7·035	5
2852	156	..	..	..	.....	6	22 19·46	1·093	6	32 21 10·9	7·047	6
2853	8	22 33·80	2·035	2	50 27 0·3	7·066	2
2854	..	2476	160	..	..	..	7 Cygni α^1	6	22 46·59	1·472	6	38 3 44·6	7·084	6
2855	7·8	23 58·48	1·326	4	35 36 30·6	7·181	4
2856	7	24 31·94	1·788	3	44 14 47·0	7·227	3
2857	7·8	24 35·92	1·920	3	47 21 24·5	7·232	3
2858	7	24 45·44	1·629	5	40 53 10·2	7·245	5
2859	4	2481	175	..	850	..	10 Cygni α^2	4	24 54·60	1·512	11	38 40 14·4 14·1	7·258	48 59
2860	7	25 12·27	1·924	5	47 24 40·8	7·282	5
2861	7	25 22·06	1·782	6	44 3 57·4	7·295	6
2862	7	25 46·24	1·678	5	41 48 59·3	7·327	5
2863	7·8	25 58·72	1·597	3	40 12 7·8	7·344	3
2864	6·7	26 6·73	1·292	5	34 58 55·2	7·355	5
2865	6·7	26 17·15	1·592	4	40 5 45·4	7·369	4
2866	7·8	26 17·44	1·686	2	41 57 30·7	7·370	2
2867	7·8	26 35·15	1·680	2	41 49 35·3	7·394	2
2868	190	8	26 46·45	1·282	2	34 48 40·1	7·409	2
2869	8·9	26 54·10	1·798	2	44 20 59·5	7·422	2
2870	6	19 26 59·17	+2·086	6	51 38 44·8	-7·427	6

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2871	191	7.8	^h 19 ^m 26 ^s 59.86	+1.601	3	40° 14' 14".0	-7".428	3
2872	6.7	27 19.27	1.305	5	35 8 41.6	7.453	5
2873	7	27 25.82	1.800	5	44 22 2.4	7.464	5
2874	8	27 33.94	1.953	2	48 2 58.0	7.474	2
2875	6	27 57.61	1.069	6	31 47 48.5	7.506	6
2876	6	28 27.62	1.651	11	41 8 49.8	7.546	11
2877	B. F. 2664	6	28 29.66	1.953	6	47 59 54.5	7.549	6
2878	6	28 43.57	1.892	6	46 28 0.8	7.568	6
2879	7.8	29 13.45	1.892	1	46 25 13.7	7.608	1
2880	6	29 15.63	1.708	6	42 14 42.3	7.611	6
2881	211	..	..	..	.....	6	29 24.52	1.551	6	39 9 59.2	7.623	6
2882	8.9	29 31.58	1.962	2	48 9 33.1	7.635	2
2883	8.9	29 37.59	1.958	2	48 3 2.3	7.641	2
2884	8.9	29 42.17	2.011	1	49 27 4.9	7.647	1
2885	7	29 56.95	1.014	6	31 1 0.4	7.667	6
2886	7.8	30 9.51	2.010	4	49 24 31.3	7.684	4
2887	7.8	30 14.33	2.012	4	49 27 9.4	7.690	4
2888	8	30 14.59	1.548	3	39 4 39.1	7.691	3
2889	6.7	30 16.01	2.106	6	52 2 11.6	7.693	6
2890	8	30 16.86	2.014	3	49 29 45.8	7.694	3
2891	5.6	30 29.61	1.907	6	46 42 50.3	7.711	6
2892	6.7	30 38.21	2.099	6	51 49 40.0	7.723	6
2893	6	30 44.82	1.866	6	45 43 13.3	7.731	6
2894	..	2496	220	..	..	446	.....	7	30 50.11	1.608	5	40 10 58.2	7.738	5
2895	6	2498	223	..	857	447	13 Cygni 9	4	31 20.50	1.611	19	40 12 ^{51.1} _{50.2}	7.779	²³ ₇₄
2896	7.8	31 42.67	1.613	4	40 13 22.6	7.809	4
2897	233	..	..	..	.....	5.6	32 40.05	+1.662	5	41 9 3.7	7.886	5
2898	37	2505	236	iv.33	859	448	61 Draconis σ	4	32 41.61	-0.190	6	20 39 39.8	7.888	9
2899	5.6	32 43.30	+0.656	6	26 59 13.8	7.891	6
2900	6.7	32 54.84	-3.376	7	10 47 22.6	7.906	6
2901	8	33 0.59	+2.102	4	51 47 17.7	7.914	4
2902	7.8	33 7.49	1.907	1	46 35 31.8	7.923	1
2903	8.9	33 9.98	2.093	3	51 32 11.8	7.926	3
2904	7	33 14.08	1.563	5	39 11 41.2	7.932	5
2905	..	2503	14 Cygni	5.6	19 33 15.51	+1.948	6	47 36 54.8	-7.934	6

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2906	8	^h 19 ^m 34 ^s 4.27	+1.573	3	39° 19' 43.5	-7.999	3
2907	5	34 24.19	1.349	6	35 27 57.1	8.025	6
2908	7	34 41.26	2.111	8	51 58 51.9	8.047	8
2909	6	34 58.32	1.841	6	44 55 10.0	8.070	6
2910	7	35 8.08	2.058	5	50 25 8.4	8.084	5
2911	8	35 12.36	2.036	3	49 47 50.9	8.092	3
2912	7	35 27.93	2.050	5	50 11 21.8	8.110	5
2913	9	35 43.16	2.049	2	50 8 51.1	8.130	2
2914	8.9	36 2.43	2.059	4	50 25 7.4	8.156	4
2915	8	36 4.74	2.060	3	50 26 43.0	8.159	3
2916	7.8	36 6.99	+1.617	1	40 3 47.2	8.162	1
2917	6	36 14.64	-0.513	6	18 49 7.8	8.172	6
2918	9	36 15.35	+2.055	2	50 18 8.1	8.173	2
2919	7	36 28.93	2.035	5	49 43 26.0	8.191	5
2920	6	36 29.46	2.107	6	51 46 30.4	8.192	6
2921	7	36 32.30	2.061	6	50 27 1.1	8.196	6
2922	..	2512	261	..	..	449	16 Cygni c	6	36 45.73	1.611	11	39 54 41.1	8.214	11
2923	7.8	36 45.87	1.006	5	30 35 28.8	8.214	5
2924	..	2513	262	..	..	..	.....	6.7	36 48.54	1.611	11	39 55 7.1	8.218	9
2925	6	37 24.59	1.998	6	48 40 38.3	8.265	6
2926	9	37 28.51	2.064	2	50 29 48.0	8.271	2
2927	8.9	38 18.13	2.061	2	50 22 3.1	8.336	2
2928	6.7	38 22.19	2.039	6	49 44 9.3	8.342	6
2929	7	38 30.50	+1.507	3	37 53 22.5	8.352	3
2930	6.7	39 1.14	-1.148	6	16 3 32.5	8.393	6
2931	7	39 2.05	+1.506	4	37 50 37.1	8.395	4
2932	9	2520	280	..	866	..	18 Cygni d	3.4	39 2.12	1.868	13	45 19 38.4	8.395	12
2933	7	39 19.26	2.047	5	49 54 9.3	8.417	5
2934	7.8	39 21.10	2.071	8	50 34 11.5	8.420	8
2935	5	39 31.61	1.159	6	32 26 0.9	8.434	6
2936	284	..	..	..	.....	6.7	39 46.23	1.231	5	33 24 47.5	8.453	5
2937	8	40 18.12	1.895	4	45 53 46.9	8.495	4
2938	7.8	40 23.35	2.073	2	50 33 49.0	8.502	2
2939	7.8	40 36.56	1.905	4	46 6 51.1	8.519	4
2940	19 41 30.91	+1.753	1	42 33 24.9	-8.591	1

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2941	6	^h 19 ^m 41 ^s 53.60	+1.754	4	42° 33' 27".9	-8".621	4
2942	6.7	42 8.01	2.076	6	50 33 16.7	8.640	6
2943	..	2534	304	..	..	..	19 Cygni	6	42 43.92	2.119	6	51 45 43.6	8.687	6
2944	8	42 57.27	1.909	3	46 5 33.6	8.705	3
2945	7.8	43 32.26	1.243	3	33 22 8.9	8.751	3
2946	7	43 32.55	+1.255	5	33 33 19.9	8.751	5
2947	9	43 38.35	-0.067	1	20 58 37.0	8.759	1
2948	9	43 43.33	-0.044	1	21 6 45.1	8.765	1
2949	6.7	43 50.04	+2.121	5	51 45 37.9	8.774	5
2950	5	44 5.93	2.056	6	49 52 39.4	8.795	6
2951	8.9	44 27.12	+2.095	2	50 57 1.1	8.823	2
2952	6	44 31.67	-0.037	6	21 7 40.1	8.829	6
2953	6	44 51.62	+1.077	5	31 3 30.0	8.855	5
2954	8	44 53.43	1.917	4	46 9 14.6	8.857	4
2955	8.9	44 56.91	2.096	2	50 56 47.4	8.862	2
2956	8	45 24.14	2.032	3	49 8 1.7	8.897	3
2957	6.7	45 38.50	1.789	5	43 6 22.2	8.916	5
2958	..	2542	325	..	..	..	20 Cygni <i>d</i>	5	45 51.07	1.508	5	37 29 22.8	8.932	5
2959	8	45 57.52	2.122	2	51 39 48.7	8.940	2
2960	8	46 8.32	2.128	2	51 48 54.0	8.955	2
2961	8	46 17.63	2.125	2	51 43 53.0	8.967	2
2962	6	46 31.37	1.767	6	42 33 14.7	8.985	6
2963	7	47 1.88	1.760	2	42 22 55.1	9.024	2
2964	7	47 10.91	2.036	5	49 8 2.6	9.036	5
2965	8.9	47 13.09	0.818	3	27 55 29.1	9.043	3
2966	7.8	47 23.65	2.041	3	49 15 45.9	9.053	3
2967	7	47 23.91	1.775	4	42 40 52.3	9.053	4
2968	6	47 25.33	0.942	6	29 16 40.2	9.055	6
2969	8	47 27.26	1.931	2	46 21 15.5	9.057	2
2970	8	47 28.50	1.927	2	46 14 53.5	9.059	2
2971	8	47 49.05	1.878	4	45 1 18.2	9.086	4
2972	7.8	48 8.47	2.034	3	49 1 43.6	9.111	3
2973	8.9	48 15.94	+2.108	3	51 5 32.1	9.121	3
2974	38	2554	343	iv.34	878	..	63 Draconis <i>s</i>	5	48 45.21	-0.160	7	20 12 59.4	9.159	18
2975	7.8	19 48 51.98	+1.775	1	42 34 50.1	-9.168	1

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2976	1 Cephei	2552	349	23 Cygni	5.6	^h 19 ^m 49 ^s 22.67	+1.238	18	32° 58' 16.7	-9.207	18
2977	49 23.86	1.793	1	42 57 23.9	9.209	1
2978	7	49 26.17	1.192	2	32 19 41.6	9.212	2
2979	7.8	49 44.43	+1.638	3	39 40 44.9	9.236	3
2980	7	50 12.83	-3.686	4	9 56 59.0	9.272	4
2981	8	50 25.41	+2.095	3	50 34 56.1	9.288	3
2982	8	50 28.80	2.019	3	48 27 44.5	9.293	3
2983	8.9	50 33.22	0.837	4	27 57 13.8	9.301	4
2984	5	50 37.95	2.080	6	50 8 12.9	9.304	6
2985	8	50 39.32	2.104	3	50 50 46.8	9.306	3
2986	7.8	50 42.00	1.934	4	46 13 58.6	9.310	4
2987	..	2556	356	..	..	..	24 Cygni ↓	6	50 43.00	1.557	5	38 3 41.4	9.311	5
2988	7.8	51 4.25	1.936	4	46 14 37.8	9.338	4
2989	6.7	51 32.59	2.014	5	48 14 48.7	9.375	5
2990	6	51 33.11	1.640	6	39 36 14.2	9.377	6
2991	6	51 35.31	1.196	6	32 14 55.5	9.378	6
2992	6	51 35.85	0.997	6	29 40 41.6	9.379	6
2993	6	51 38.70	1.013	6	29 53 13.1	9.382	6
2994	8	51 43.43	1.412	3	35 28 48.0	9.388	3
2995	7.8	51 44.95	1.929	4	46 7 19.7	9.403	4
2996	2?	..	371	..	..	..	Cephei	5	52 16.89	1.156	13	31 39 31.5	9.432	13
2997	8	52 27.08	1.415	3	35 29 50.3	9.445	3
2998	8.9	52 27.34	1.894	4	45 6 19.9	9.445	4
2999	8	52 33.26	0.843	4	27 54 24.7	9.458	4
3000	8	53 12.38	2.115	3	50 59 8.9	9.504	3
3001	6	53 22.13	1.881	6	44 44 28.5	9.516	6
3002	8.9	53 23.63	1.410	3	35 21 16.5	9.518	3
3003	8.9	54 11.89	1.413	3	35 21 7.2	9.580	3
3004	380	..	..	..	.....	5.6	54 12.81	1.590	6	38 27 38.8	9.581	6
3005	8.9	54 24.27	2.117	3	50 58 50.8	9.596	3
3006	7.8	54 36.72	+2.064	1	49 25 39.6	9.611	1
3007	8	54 38.26	-3.583	4	9 59 55.1	9.614	4
3008	8	54 40.68	+0.828	3	27 38 13.3	9.621	3
3009	8	54 49.96	2.092	3	50 13 21.8	9.628	3
3010	7.8	19 55 3.73	+1.947	2	46 15 23.9	-9.646	2

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3011	391	7	^h 19 ^m 55 ^s 6.08	+1.244	6	32° 42' 28".6	- 9.649	6
3012	9	55 15.85	0.825	2	27 33 31.1	9.661	2
3013	7	55 16.21	2.074	5	49 39 52.6	9.662	5
3014	7	55 33.47	1.954	5	46 24 14.6	9.684	5
3015	8	55 44.49	1.901	4	45 2 55.3	9.698	4
3016	8.9	55 50.76	1.418	3	35 19 45.7	9.706	3
3017	..	2570	397	..	..	..	26 Cygni <i>e</i>	6	55 59.01	1.696	6	40 25 10.8	9.716	6
3018	9	55 59.24	2.123	2	51 2 51.3	9.717	2
3019	6.7	56 4.64	0.773	6	26 58 58.7	9.724	6
3020	7.8	56 14.34	1.519	4	37 0 56.7	9.736	4
3021	9	56 22.39	0.826	2	27 29 18.9	9.746	2
3022	7.8	56 22.53	2.101	4	50 21 15.6	9.746	4
3023	8	56 45.14	2.097	3	50 14 58.6	9.775	3
3024	7.8	57 22.21	2.086	2	49 52 30.5	9.822	2
3025	8	57 29.33	0.758	3	26 44 58.7	9.831	3
3026	7	57 45.74	1.267	1	32 52 37.1	9.852	1
3027	7.8	57 50.57	1.692	3	40 13 25.7	9.858	3
3028	8	57 58.69	2.033	2	48 20 7.9	9.868	2
3029	8.9	58 2.59	2.133	2	51 11 19.3	9.873	2
3030	7	58 33.60	2.084	4	49 43 15.3	9.913	4
3031	8.9	58 41.15	2.134	2	51 11 5.3	9.922	2
3032	8	59 18.83	2.112	3	50 28 30.6	9.970	3
3033	39	2578	421	v. 43	..	458	64 Draconis <i>e</i>	5	59 25.96	0.661	5	25 42 34.1	9.979	6
3034	7.8	59 36.17	2.145	4	51 26 38.9	9.992	4
3035	8	59 57.06	1.695	1	40 5 28.4	10.018	1
3036	6	19 59 57.19	1.623	6	38 42 6.6	10.019	6
3037	39?	2580	3	v. 44	..	..	65 Draconis	6	20 0 12.20	0.686	5	25 54 3.9	10.037	5
3038	8	0 15.37	1.393	3	34 37 6.9	10.041	3
3039	8	0 19.52	1.367	2	34 12 57.0	10.047	2
3040	0 53.82	0.772	3	26 41 57.8	10.090	3
3041	6	1 1.89	1.370	7	34 12 16.6	10.100	7
3042	5.6	1 13.25	1.559	6	37 23 30.6	10.115	6
3043	8	1 22.75	2.127	3	50 47 50.4	10.127	3
3044	7	1 33.67	2.036	5	48 9 49.6	10.141	5
3045	8.9	20 1 33.75	+2.107	2	50 10 46.4	-10.141	2

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3046	7.8	20 ^h 1 ^m 40 ^s .74	+2.028	2	47° 56' 33".7	-10".150	2
3047	6.7	1 45.98	1.710	6	40 19 0.7	10.156	6
3048	40	2587	21	iv.35	886	..	67 Draconis ϵ	4	1 54.96	0.311	9	22 40 4.1	10.168	29
3049	7	2 3.15	2.128	5	50 45 9.6	10.178	5
3050	8	2 3.79	1.917	3	45 0 17.5	10.178	3
3051	6	2 19.67	0.776	6	26 39 19.3	10.198	6
3052	..	2586	25	..	888	..	66 Draconis	6	2 30.52	0.952	6	28 33 12.9	10.212	6
3053	8	2 57.89	1.441	3	35 13 25.1	10.246	3
3054	8	2 58.91	2.109	2	50 7 32.8	10.248	2
3055	30	..	..	..	.....	8.9	3 0.44	0.799	2	26 50 58.0	10.250	2
3056	7.8	3 18.48	1.699	4	39 58 14.2	10.272	4
3057	7	3 42.09	1.286	5	32 45 4.1	10.302	5
3058	8	3 46.53	2.109	2	50 4 42.1	10.307	2
3059	..	2592	..	..	..	..	.....	6.7	4 1.40	0.305	6	22 31 9.6	10.326	6
3060	42	..	..	..	.....	8	4 15.96	0.806	3	26 50 38.8	10.344	3
3061	8	4 20.41	1.927	3	45 5 6.4	10.349	3
3062	8	4 29.04	2.018	3	47 27 45.7	10.360	3
3063	8.9	4 30.00	1.468	2	35 33 51.9	10.361	2
3064	8	4 33.25	2.166	3	51 44 34.3	10.365	3
3065	8.9	4 39.12	+0.833	2	27 5 33.7	10.373	2
3066	..	2604	47	ii. 47	..	460	69 Draconis	6	4 45.00	-1.499	6	14 3 14.4	10.380	6
3067	8	4 45.65	+2.165	3	51 40 54.9	10.381	3
3068	8.9	4 46.81	2.014	3	47 19 40.6	10.382	3
3069	8.9	4 53.08	2.171	2	51 52 45.9	10.390	2
3070	8.9	4 53.51	1.924	3	44 57 36.5	10.391	3
3071	7	4 55.84	1.407	5	34 31 48.1	10.394	5
3072	8.9	4 59.56	2.171	1	51 51 44.8	10.398	1
3073	8	5 1.22	1.832	2	42 44 52.0	10.400	2
3074	7	5 3.71	2.117	5	50 13 56.2	10.403	5
3075	8.9	5 22.79	1.475	5	35 37 11.5	10.427	5
3076	8.9	5 23.02	1.921	3	44 50 42.0	10.428	3
3077	7.8	5 48.64	2.122	4	50 17 50.6	10.460	4
3078	8.9	5 57.80	2.022	3	47 27 0.4	10.471	3
3079	6.7	6 13.45	1.840	5	42 49 42.9	10.490	5
3080	7.8	20 6 29.14	+2.173	5	51 48 10.2	-10.510	5

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3081	8	20 ^h 6 ^m 29 ^s .98	+2.174	3	51° 50' 22".3	-10".511	3
3082	7.8	6 36.17	-0.481	10	17 46 16.1	10.519	10
3083	8	6 42.73	+0.788	2	26 30 29.1	10.526	2
3084	8	6 56.95	+1.728	2	40 18 41.5	10.544	2
3085	6.7	7 0.02	-0.733	5	16 38 39.0	10.548	5
3086	8	7 3.18	+1.999	3	46 45 28.5	10.552	3
3087	5	7 14.34	1.671	6	39 6 14.5	10.566	6
3088	6	7 19.08	2.017	6	47 11 29.9	10.571	6
3089	16	2601	59	..	..	..	30 Cygni α^1	5	7 19.40	1.882	6	43 45 16.0	10.572	7
3090	8	7 29.94	1.734	2	40 22 58.3	10.585	2
3091	16	2603	62	..	892	..	31 Cygni α^2	4.5	7 38.73	1.886	10	43 49 47.9	10.595	11
3092	7.8	7 41.58	2.125	4	50 14 35.5	10.599	4
3093	8.9	7 54.23	1.475	3	35 25 37.7	10.615	3
3094	8.9	7 57.70	2.022	3	47 17 21.3	10.619	3
3095	8	8 17.14	2.182	3	51 58 0.2	10.643	3
3096	8.9	8 20.78	1.934	3	44 57 14.7	10.648	3
3097	..	2610	71	..	..	..	68 Draconis	6	8 27.02	0.983	6	28 29 39.5	10.655	6
3098	8	8 28.26	1.475	5	35 23 59.9	10.657	5
3099	7.8	8 29.44	2.094	4	49 16 36.7	10.658	4
3100	7	8 37.56	1.591	5	37 27 24.2	10.668	5
3101	7	8 46.77	1.479	6	35 26 27.9	10.680	6
3102	3 Cephei	2611	74	..	895	..	33 Cygni	4.5	8 58.26	1.393	12	34 0 36.0	10.693	12
3103	8	8 59.77	0.854	3	27 2 32.5	10.696	3
3104	8.9	9 7.73	1.938	3	44 59 0.8	10.705	3
3105	6.7	9 9.44	2.175	5	51 40 45.5	10.708	5
3106	7.8	9 9.74	1.932	5	44 50 10.5	10.708	5
3107	8.9	9 21.17	0.311	5	22 16 17.6	10.722	5
3108	17	2612	78	..	898	..	32 Cygni	5	9 35.71	1.852	6	42 51 51.9	10.740	7
3109	8	9 46.15	2.178	2	51 40 54.5	10.752	2
3110	7	9 51.29	1.940	6	44 59 52.0	10.759	6
3111	..	2615	82	..	..	..	.....	6	9 57.01	1.111	6	29 56 16.5	10.766	6
3112	7	10 2.76	0.320	5	22 17 55.7	10.773	5
3113	..	2613	..	..	..	..	.....	5.6	10 9.51	2.130	8	50 13 2.3	10.782	8
3114	6	10 11.58	1.742	6	40 20 52.7	10.784	6
3115	8.9	20 10 23.68	+2.028	3	47 15 19.9	-10.799	3

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3116	8	^h 20 ^m 10 ^s 24.85	+1.952	3	45° 14' 36".8	-10.800	3
3117	7.8	10 28.00	2.123	5	49 59 29.2	10.804	5
3118	6.7	10 34.42	2.157	5	50 59 27.9	10.812	5
3119	7	10 39.13	1.632	3	38 4 43.4	10.818	3
3120	8	10 44.99	2.178	2	51 39 0.6	10.825	2
3121	6.7	10 58.49	2.051	5	47 51 47.5	10.842	5
3122	8	10 59.05	2.128	4	50 4 44.1	10.843	4
3123	8.9	11 3.50	0.901	2	27 24 21.1	10.848	2
3124	8.9	11 6.27	2.035	3	47 24 4.3	10.852	3
3125	..	2618	..	..	..	..	.....	6	11 23.18	2.121	6	49 51 16.9	10.872	6
3126	7	11 23.21	1.641	3	38 11 11.0	10.872	3
3127	7.8	11 27.25	1.744	6	40 17 42.1	10.877	6
3128	8	11 36.79	2.131	1	50 7 56.3	10.889	1
3129	..	2620	99	..	..	..	.....	7	11 52.41	0.751	5	25 49 3.7	10.908	4
3130	8	11 52.69	1.967	2	45 31 8.5	10.908	2
3131	7.8	11 54.72	1.954	5	45 11 28.7	10.911	5
3132	6	12 2.76	2.179	6	51 35 7.3	10.920	6
3133	7	12 15.08	2.171	3	51 19 2.7	10.935	3
3134	8.9	12 17.00	1.900	2	43 47 52.4	10.938	2
3135	8	12 35.68	2.190	4	51 51 37.6	10.960	4
3136	8	12 41.20	1.912	3	44 2 47.9	10.967	3
3137	8	12 54.69	2.047	3	47 35 37.5	10.984	3
3138	7.8	13 12.42	1.966	7	45 22 42.6	11.005	7
3139	8	13 13.67	2.188	3	51 45 42.0	11.007	3
3140	6	13 21.96	2.170	6	51 11 26.3	11.017	6
3141	7.8	13 36.04	1.961	12	45 13 45.8	11.034	12
3142	7.8	13 42.90	1.487	5	35 11 36.7	11.042	5
3143	7	13 53.79	1.904	6	43 45 30.8	11.056	6
3144	8.9	14 11.74	2.184	5	51 33 58.9	11.077	5
3145	7.8	14 13.85	1.481	7	35 3 2.9	11.079	7
3146	8.9	14 14.88	+1.955	3	45 1 23.7	11.081	3
3147	7	14 53.68	-0.417	5	17 41 18.1	11.128	5
3148	4	2632	126	ii. 48	901	..	1 Cephei α	5	15 3.00	-1.796	4	12 52 0.0	11.140	6
3149	19	2624	124	..	902	467	37 Cygni γ	3	15 24.54	+2.148	12	50 20 45.0 } 45.3 }	11.166	22 } 19 }
3150	6	20 15 36.00	+0.548	6	23 45 21.6	-11.180	6

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3151	6·7	^h 20 ^m 15 ^s 53·29	+1·952	6	[°] 44 ['] 48 ^{''} 36·9	—11·201	6
3152	8·9	15 54·94	1·943	2	44 34 40·8	11·203	2
3153	7	15 58·76	1·660	5	38 11 27·1	11·208	6
3154	5	16 0·74	2·124	6	49 34 35·3	11·210	6
3155	7	16 1·78	+2·184	6	51 23 39·0	11·211	6
3156	7	16 13·33	—0·342	5	17 59 7·9	11·225	5
3157	7	16 22·63	+2·058	5	47 37 28·0	11·236	5
3158	7·8	16 23·78	1·670	3	38 21 45·3	11·238	3
3159	..	2628	135	..	..	..	71 Draconis	6	16 25·16	1·017	10	28 20 36·7	11·239	10
3160	8	16 30·76	2·058	3	47 36 41·1	11·246	3
3161	7	16 38·98	1·753	5	40 3 50·7	11·256	5
3162	8·9	16 51·92	1·503	3	35 13 56·8	11·271	3
3163	8·9	16 55·50	1·962	4	44 58 5·5	11·276	4
3164	7·8	17 20·75	1·660	1	38 4 49·0	11·306	1
3165	7	17 39·98	1·532	5	35 40 30·1	11·329	5
3166	7·8	17 57·61	2·159	6	50 27 31·3	11·350	6
3167	6	18 6·26	1·549	6	35 56 9·7	11·361	6
3168	7	18 16·99	0·014	5	19 48 40·9	11·373	5
3169	9	18 18·19	1·967	2	44 58 44·3	11·375	2
3170	7·8	18 18·36	1·683	1	38 28 30·7	11·375	1
3171	7·8	18 38·22	2·162	1	50 30 59·4	11·399	1
3172	6	18 48·97	2·079	6	48 0 42·1	11·412	6
3173	..	2636	..	..	..	..	.....	6	19 11·40	0·314	6	21 43 38·6	11·439	6
3174	6	19 13·41	2·154	5	50 12 56·0	11·441	5
3175	8·9	19 42·71	1·981	2	45 13 14·6	11·476	2
3176	8	19 51·49	1·514	4	35 10 19·0	11·487	4
3177	6·7	19 52·70	2·158	5	50 16 20·1	11·488	5
3178	8	19 53·54	1·981	3	45 12 18·0	11·489	3
3179	7·8	20 19·20	1·667	1	37 58 33·3	11·520	1
3180	8·9	20 28·57	1·518	3	35 11 27·0	11·531	3
3181	6	20 36·40	1·561	6	35 56 3·0	11·541	6
3182	8·9	20 44·90	1·200	4	30 19 49·1	11·551	4
3183	8·9	21 4·85	1·198	6	30 15 48·8	11·575	6
3184	6	21 7·91	1·254	6	31 1 6·4	11·578	6
3185	8	20 21 11·90	+1·600	1	36 36 16·4	—11·583	1

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3186	..	2639	169	43 Cygni ω^1	5	^h 20 ^m 21 ^s 13.79	+1.824	6	[°] 41 14 32.8	-11.585	6
3187	7	21 15.61	2.154	2	50 0 52.2	11.587	2
3188	7.8	21 17.67	1.600	5	36 35 41.2	11.590	5
3189	8.9	21 24.66	1.194	3	30 11 6.3	11.598	3
3190	8.9	21 29.46	1.192	2	30 9 7.1	11.604	2
3191	6	21 47.61	1.453	6	33 59 3.8	11.625	6
3192	8	21 52.36	1.216	4	30 26 39.8	11.631	4
3193	7	22 29.42	2.174	2	50 31 51.3	11.675	2
3194	8	23 23.02	1.584	2	36 7 39.2	11.738	2
3195	7	23 38.71	2.164	5	50 7 35.1	11.757	5
3196	44 Cygni	6	23 42.24	1.975	6	44 42 44.9	11.761	6
3197	8	23 45.27	1.993	3	45 11 14.7	11.765	3
3198	7.8	23 57.87	2.066	3	47 10 10.0	11.779	3
3199	8	24 1.13	1.261	2	30 53 44.1	11.783	2
3200	7	24 9.80	2.168	5	50 12 32.4	11.793	5
3201	22	2645	192	..	908	..	45 Cygni ω^2	5	24 10.18	1.855	7	41 40 57.5	11.794	7
3202	7.8	24 29.93	2.174	1	50 21 57.7	11.817	1
3203	8.9	24 30.98	1.226	2	30 22 27.1	11.819	2
3204	8	24 31.81	1.610	3	36 30 26.9	11.819	3
3205	199	..	..	..	.....	6.7	25 1.19	1.847	5	41 25 23.3	11.854	5
3206	7.8	25 2.15	1.706	4	38 20 31.3	11.855	4
3207	7	25 15.74	1.584	12	35 57 38.3	11.871	12
3208	7	25 16.11	0.307	6	21 18 7.8	11.872	6
3209	8	25 17.12	2.009	4	45 28 4.0	11.873	4
3210	..	2647	203	..	910	..	.....	5	25 26.89	1.848	7	41 24 58.8	11.884	8
3211	8	25 28.14	+1.220	4	30 12 42.8	11.886	4
3212	6	25 40.00	-7.321	8	5 54 33.3	11.900	10
3213	6.7	25 55.35	+1.709	4	38 19 59.3	11.918	4
3214	7	26 1.05	1.592	12	36 2 52.6	11.924	12
3215	7	26 9.29	2.127	4	48 46 3.9	11.934	4
3216	6	26 13.62	2.141	6	49 10 15.7	11.939	6
3217	6	26 15.64	2.083	6	47 27 4.6	11.941	6
3218	5	2651	211	..	911	468	2 Cephei δ	5	26 22.25	1.019	7	27 38 34.1	11.949	7
3219	8	26 22.74	2.020	4	45 39 51.0	11.949	4
3220	6.7	20 27 2.53	+2.133	5	48 52 8.8	-11.996	5

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3221	217	5	20 ^h 27 ^m 7 ^s ·45	+1 ^s ·473	6	33° 51' 43"·7	-12"·002	6
3222	8	27 8·90	1·621	2	36 29 13·5	12·003	2
3223	7·8	27 15·77	2·016	4	45 28 15·3	12·011	4
3224	7	27 24·26	1·680	1	37 37 9·4	12·021	1
3225	7·8	27 39·48	2·082	4	47 16 58·2	12·039	4
3226	6	27 41·39	1·960	6	43 57 12·5	12·041	6
3227	8	27 42·77	1·971	2	44 13 50·3	12·043	2
3228	6	27 45·05	2·157	6	49 33 4·7	12·046	6
3229	8	27 45·92	2·019	3	45 31 31·0	12·047	3
3230	8	27 53·51	1·262	3	30 34 56·2	12·055	3
3231	8	28 0·51	1·609	4	36 11 22·6	12·068	4
3232	7	28 4·36	1·695	2	37 50 33·5	12·068	2
3233	7·8	28 10·59	1·237	4	30 13 6·6	12·075	4
3234	7	28 20·03	1·592	5	35 50 45·9	12·086	5
3235	8	28 23·30	1·695	2	37 49 16·2	12·090	2
3236	6	28 31·25	2·134	6	48 45 43·6	12·099	6
3237	7·8	28 37·18	1·958	3	43 48 15·7	12·106	3
3238	8·9	29 0·11	2·018	2	45 22 38·7	12·133	2
3239	236	..	..	..	.....	6	29 18·14	1·746	6	38 47 51·5	12·154	6
3240	7	30 42·09	+2·105	3	47 40 5·0	12·251	3
3241	..	2673	257	..	917	..	.....	5	30 44·29	-0·165	6	18 6 48·0	12·254	6
3242	8	31 8·18	+0·620	3	23 20 31·5	12·279	3
3243	7	31 15·21	2·112	3	47 49 27·3	12·289	4
3244	6·7	31 42·76	2·062	3	46 19 47·5	12·321	3
3245	6	31 48·96	1·704	6	37 41 11·9	12·328	6
3246	265	..	920	..	.....	6	31 57·85	0·193	6	20 7 10·2	12·338	6
3247	7·8	32 30·27	0·327	5	20 59 0·4	12·375	5
3248	6	32 36·22	2·189	6	50 5 12·4	12·382	6
3249	6·7	32 46·89	2·136	6	48 24 24·0	12·394	6
3250	7·8	33 51·49	+1·249	4	29 54 37·1	12·468	4
3251	..	2682	279	iii.53	921	..	73 Draconis	5	33 52·02	-0·655	4	15 41 56·6	12·469	6
3252	6	33 53·82	+2·239	6	51 35 20·5	12·471	6
3253	6	34 4·68	1·556	6	34 39 39·7	12·483	6
3254	7	34 29·05	0·345	5	20 58 44·4	12·510	5
3255	8	20 34 33·84	+1·242	3	29 45 0·9	-12·516	3

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3256	8	20 ^h 34 ^m 34 ^s ·38	+ 2·071	3	46° 18' 53"·4	-12"·517	3
3257	24	2679	285	..	923	474	50 Cygni α	2	34 57·22	2·042	..	45 23 37·0 } 37·7 }	12·543	50 } 96 }
3258	6	35 4·74	2·161	6	48 57 30·2	12·551	6
3259	8	35 8·51	+ 0·633	3	23 9 48·3	12·554	3
3260	35 9·43	- 6·714	4	6 4 40·6	12·557	5
3261	7	35 11·73	- 4·099	5	8 16 2·6	12·559	5
3262	7	35 26·71	+ 1·613	4	35 33 58·0	12·576	4
3263	6	36 15·04	1·284	6	30 10 43·0	12·631	6
3264	..	2683	293	..	..	..	51 Cygni	6	36 21·13	1·847	6	40 20 17·1	12·638	6
3265	6·7	37 3·22	2·151	6	48 27 41·2	12·686	6
3266	7	37 21·27	2·011	3	44 21 47·7	12·706	3
3267	7·8	37 41·10	+ 0·674	4	23 19 28·7	12·726	4
3268	..	2701	316	i. 38	..	..	.....	..	38 17·30	- 3·277	1	9 13 15·1	12·769	1
3269	6	38 19·71	+ 1·978	6	43 23 17·6	12·772	6
3270	7·8	38 21·72	1·618	4	35 23 28·6	12·774	4
3271	8	38 25·31	1·984	1	43 31 30·6	12·778	1
3272	6·7	38 25·81	1·517	5	33 34 9·5	12·779	5
3273	7·8	38 29·43	2·148	1	48 13 3·7	12·783	1
3274	6	38 35·43	1·292	6	30 4 48·5	12·790	6
3275	7	38 56·88	+ 2·016	6	44 19 55·5	12·814	6
3276	..	2704	331	i. 39	..	..	75 Draconis	6	39 36·30	- 3·235	5	9 14 15·2	12·859	6
3277	..	2705	333	i. 40	..	475	74 Draconis	6	39 55·19	- 2·998	4	9 34 55·7	12·880	6
3278	7	40 15·10	+ 2·015	6	44 9 35·7	12·902	6
3279	6·7	40 18·94	2·157	6	48 17 1·8	12·906	6
3280	8	40 28·86	1·756	2	37 54 45·4	12·917	2
3281	6 Cephei	..	332	..	931	..	B. F. 2846	5	40 37·58	1·501	5	33 5 54·8	12·927	6
3282	8·9	40 46·04	1·679	3	36 18 7·8	12·936	3
3283	..	2697	335	v. 45	..	..	4 Cephei	6	40 46·82	0·779	6	24 1 55·4	12·937	6
3284	6	40 49·62	2·051	6	45 6 49·7	12·941	6
3285	6	40 50·51	1·747	6	37 41 29·7	12·941	6
3286	7	2698	338	..	932	478	3 Cephei η	4	41 24·04	1·223	10	28 53 49·3 } 45·4 }	12·978	22 } 9 }
3287	8	41 28·72	2·182	4	48 58 47·1	12·984	4
3288	8·9	41 28·82	1·551	1	33 51 42·8	12·984	1
3289	7·8	41 33·54	1·769	3	38 5 12·6	12·989	3
3290	7	20 41 47·18	+ 1·853	2	39 55 52·1	-13·004	2

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3291	8	^h 20 ^m 41 ^s 47·00	+ 2·182	4	48° 56' 6"·9	-13"·004	4
3292	7	41 48·30	2·271	5	51 50 3·0	13·005	5
3293	8·9	41 52·27	1·425	1	31 44 54·7	13·009	1
3294	8	42 3·27	0·426	3	21 2 4·2	13·022	3
3295	6·7	42 12·42	1·782	5	38 16 56·7	13·032	5
3296	349	..	..	..	.....	8	42 23·49	1·626	4	35 7 41·5	13·044	4
3297	8	42 23·39	0·392	3	20 45 56·2	13·044	3
3298	7·8	42 24·01	1·462	4	32 16 48·6	13·044	4
3299	29	2699	350	..	..	..	55 Cygni	6	42 28·08	2·039	6	44 35 9·7	13·049	6
3300	28	2702	357	..	..	..	56 Cygni	5·6	43 20·06	2·114	11	46 39 5·1	13·106	11
3301	359	..	..	..	.....	6·7	43 20·10	0·426	6	20 56 28·7	13·106	6
3302	7	43 29·03	2·023	4	44 2 32·0	13·116	4
3303	6	43 38·85	1·861	6	39 55 10·6	13·127	6
3304	8·9	43 39·73	1·480	3	32 26 42·1	13·128	3
3305	7·8	43 44·81	1·702	4	36 28 26·1	13·133	4
3306	7·8	43 46·00	2·169	3	48 19 23·3	13·135	3
3307	7·8	44 27·56	+ 1·454	4	31 57 43·2	13·180	4
3308	24	2795	424	..	915	469	Cephei	5	44 41·23	-42·127	17	1 16 29·8	13·195	19
3309	7	44 42·91	+ 1·456	6	31 57 21·9	13·197	6
3310	7·8	45 19·02	1·575	4	33 54 35·1	13·237	4
3311	6·7	45 22·69	1·798	11	38 18 50·0	13·241	11
3312	8	45 25·48	1·671	3	35 41 7·2	13·244	3
3313	7	45 29·32	1·917	2	41 3 12·0	13·248	2
3314	8	45 37·11	2·189	4	48 43 54·6	13·257	4
3315	8·9	46 24·71	1·606	3	34 20 41·0	13·309	3
3316	7	46 31·12	2·178	9	48 18 17·0	13·316	9
3317	30	2710	383	..	935	..	57 Cygni	5·6	46 31·39	2·114	6	46 19 39·6	13·316	6
3318	7	46 36·86	2·220	5	49 39 58·5	13·323	5
3319	6	46 40·10	2·088	6	45 32 0·3	13·326	6
3320	8·9	46 50·52	1·582	4	33 52 42·6	13·337	4
3321	7	47 1·22	1·679	5	35 39 48·4	13·349	5
3322	389	..	..	..	.....	7·8	47 5·18	0·478	8	21 3 2·2	13·353	8
3323	..	2712	7·8	47 9·47	2·117	3	46 19 51·3	13·358	3
3324	6	47 16·78	2·233	6	50 0 53·4	13·366	6
3325	8·9	20 47 27·04	+ 1·586	2	33 53 6·0	-13·377	2

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3326	7.8	^h 20 ^m 47 ^s 39.04	+1.601	4	34° 7' 52".5	-13".390	4
3327	6.7	47 44.44	1.932	6	41 11 4.0	13.396	6
3328	7.8	47 48.54	1.481	4	32 3 36.3	13.400	4
3329	391	..	..	..	.....	7	47 52.73	1.711	5	36 12 30.4	13.405	5
3330	8	47 52.96	2.209	3	49 8 36.1	13.405	3
3331	7	48 7.57	2.058	5	44 29 18.5	13.421	5
3332	7	48 22.14	2.182	4	48 12 27.2	13.437	4
3333	7	48 35.85	2.156	5	47 21 13.1	13.452	5
3334	7	48 37.70	2.055	5	44 22 7.4	13.454	5
3335	7.8	48 44.47	1.620	4	34 21 22.9	13.461	4
3336	7	49 20.27	2.156	5	47 17 59.9	13.500	5
3337	6	49 52.95	2.110	6	45 48 4.4	13.534	6
3338	31	2724	410	..	937	..	58 Cygni,	4	50 5.38	2.229	7	49 33 33.6	13.548	7
3339	9	50 9.92	1.598	2	33 48 37.9	13.553	2
3340	7	50 22.60	2.273	6	51 3 57.6	13.566	6
3341	6	50 23.40	1.896	6	39 59 50.8	13.567	6
3342	8	50 29.85	2.272	1	51 0 18.8	13.574	1
3343	7.8	50 30.39	2.192	4	48 17 7.2	13.575	4
3344	7	50 45.71	2.257	3	50 27 24.5	13.591	3
3345	7	51 9.75	2.119	1	45 56 29.4	13.617	1
3346	..	2727	..	..	938	..	.....	5.6	51 11.84	1.606	11	33 50 26.1	13.620	11
3347	8.9	51 35.70	1.606	2	33 48 8.7	13.645	2
3348	7.8	51 51.58	2.060	4	44 7 49.9	13.662	4
3349	7.8	52 19.27	2.074	4	44 28 46.7	13.691	4
3350	6.7	52 23.73	2.303	5	51 54 44.4	13.696	5
3351	7	52 24.62	2.202	3	48 24 38.5	13.697	4
3352	6	52 24.96	1.916	6	40 16 18.6	13.697	6
3353	7.8	52 26.21	2.124	1	45 56 45.0	13.698	1
3354	7	52 26.58	0.980	6	25 2 27.1	13.699	6
3355	7.8	52 27.23	1.687	4	35 14 44.9	13.699	4
3356	7.8	52 30.93	2.068	3	44 17 40.3	13.703	3
3357	6	52 39.91	2.264	6	50 29 18.0	13.713	6
3358	8	52 45.24	1.656	6	34 36 46.1	13.718	6
3359	8	52 54.59	0.502	4	20 46 51.0	13.728	4
3360	7	20 53 7.28	+2.120	1	45 44 23.3	-13.742	1

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3361	8.9	20 ^h 53 ^m 7.37 ^s	+1.683	2	35° 5' 5.3"	-13.742	2
3362	32	2732	437	59 Cygni <i>f</i> ¹	5	53 21.94	2.034	5	43 12 58.1	13.757	6
3363	8	53 23.00	0.975	4	24 54 13.8	13.758	4
3364	7	54 11.03	1.674	11	34 47 50.4	13.809	11
3365	7	54 23.90	1.712	5	35 31 15.4	13.823	5
3366	..	2735	446	..	..	..	60 Cygni	6	54 32.98	2.087	8	44 35 11.0	13.832	8
3367	452	..	..	..	.....	6	55 3.63	2.293	6	51 14 7.0	13.865	6
3368	8	55 4.17	1.688	5	34 58 3.3	13.865	5
3369	8	55 13.59	+2.075	2	44 10 31.2	13.875	2
3370	..	2754	463	1.43	939	..	76 Draconis	5	55 35.07	-3.628	6	8 10 57.7	13.898	6
3371	6	55 36.97	+2.137	6	45 57 13.6	13.900	6
3372	..	2740	455	..	..	..	.....	6.7	55 42.65	+2.318	5	52 5 19.0	13.906	5
3373	..	2749	..	..	941	480	.....	5	55 48.72	-2.296	6	10 10 2.2	13.912	6
3374	7	55 49.62	+2.144	4	46 8 15.0	13.913	4
3375	7	56 45.13	1.630	6	33 40 29.1	13.971	6
3376	465	..	..	..	.....	6	56 45.50	+2.239	6	49 7 6.4	13.972	6
3377	6.7	56 48.84	-0.555	6	14 48 41.4	13.975	6
3378	6.7	56 54.52	+1.652	6	34 4 37.4	13.981	6
3379	7	57 14.46	1.944	5	40 24 0.7	14.002	5
3380	8	57 14.79	2.092	4	44 25 10.3	14.002	4
3381	8	57 47.07	2.104	3	44 42 10.6	14.036	3
3382	8.9	57 59.27	1.645	3	33 49 28.8	14.049	3
3383	6	57 59.28	+1.824	6	37 27 59.7	14.049	6
3384	7	57 59.95	-0.484	5	15 1 16.8	14.050	5
3385	35	2746	472	..	943	..	62 Cygni ξ	4	58 1.29	+2.174	10	46 49 31.1 30.9	14.051	20 30
3386	7.8	58 8.52	1.776	4	36 24 27.7	14.059	4
3387	7	58 22.46	1.735	6	35 31 17.4	14.073	6
3388	7.8	58 24.34	1.946	2	40 17 0.2	14.075	2
3389	7.8	58 37.16	0.937	5	24 2 21.7	14.088	5
3390	8	58 46.12	1.956	2	40 29 40.8	14.097	2
3391	486	..	..	..	.....	7	59 13.21	2.050	5	42 57 6.6	14.126	5
3392	8.9	59 13.97	1.646	3	33 41 20.6	14.126	3
3393	8	20 59 20.84	1.723	4	35 10 5.9	14.133	4
3394	36	2750	491	..	948	..	63 Cygni <i>f</i> ²	5.6	21 0 3.75	2.059	6	43 6 38.5	14.178	6
3395	7.8	21 0 35.29	+1.918	4	39 20 3.5	-14.210	4

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3396	3	7	^h 21 ^m 0 ^s 40.85	+ 2.059	4	[°] 43 ['] 1 37.8	-14.216	4
3397	8	0 53.08	1.798	3	36 32 34.6	14.228	3
3398	7.8	1 18.54	1.918	3	39 15 27.8	14.254	3
3399	7.8	1 31.12	1.916	4	39 10 44.9	14.267	4
3400	7.8	1 40.78	1.766	6	35 45 27.8	14.277	6
3401	7.8	2 8.89	+ 1.502	4	30 52 29.9	14.306	4
3402	5	2 26.48	-32.964	6	1 29 10.3	14.324	7
3403	6.7	2 30.22	+ 0.421	6	19 26 39.8	14.328	6
3404	8	3 29.28	1.295	2	27 41 38.9	14.388	2
3405	8	3 53.25	1.668	3	33 33 57.6	14.412	3
3406	7.8	3 56.39	1.746	7	35 4 39.6	14.415	7
3407	8.9	4 16.27	1.747	2	35 3 32.9	14.436	2
3408	32	..	..	..	.....	7.8	4 23.23	1.848	8	37 12 30.6	14.448	8
3409	5.6	5 11.24	0.436	6	19 19 45.0	14.491	6
3410	7	5 24.01	1.294	4	27 28 37.9	14.504	4
3411	6.7	5 46.98	1.847	6	37 1 46.6	14.527	6
3412	..	2775	..	..	..	..	68 Cygni A	7	6 8.25	2.208	6	46 54 19.1	14.548	6
3413	7	6 24.20	1.847	5	36 56 50.8	14.564	5
3414	8	6 39.14	1.109	3	25 5 21.6	14.579	3
3415	51	..	955	..	.....	5	6 57.66	1.531	12	30 47 30.3	14.597	12
3416	61	..	..	..	.....	6	7 56.35	1.532	5	30 40 57.7	14.656	6
3417	63	..	..	..	.....	7	8 13.33	2.270	5	48 45 58.7	14.673	5
3418	8	8 48.55	+ 2.277	2	48 55 22.7	14.708	2
3419	..	2777	72	ii. 49	958	..	77 Draconis	5	9 3.55	- 0.973	5	12 38 50.6	14.723	7
3420	6.7	9 15.40	+ 2.210	5	46 33 4.2	14.735	5
3421	8	9 31.71	2.256	2	48 6 34.1	14.751	2
3422	7	9 48.52	0.579	7	19 57 21.1	14.767	7
3423	..	2769	74	..	..	..	67 Cygni σ	4	9 57.33	2.347	7	51 23 48.5	14.776	7
3424	6.7	10 12.27	2.259	5	48 6 30.2	14.791	5
3425	7	10 14.89	+ 1.927	4	38 18 32.7	14.794	4
3426	6	10 23.91	- 0.173	6	15 32 8.2	14.802	6
3427	41	2775	..	..	..	..	68 Cygni β	6	11 22.56	+ 2.228	6	46 50 55.8	14.860	6
3428	86	..	..	..	.....	5	11 33.35	1.788	6	34 59 47.8	14.870	6
3429	6.7	11 35.08	2.310	5	49 45 21.7	14.872	5
3430	7	21 11 42.69	+ 1.935	4	38 19 3.1	-14.880	4

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3431	8	21 ^h 12 ^m 54 ^s ·27	+2·051	1	41° 11' 11"·1	—14"·949	1
3432	6	12 56·68	+2·055	6	41 17 21·5	14·952	6
3433	7	13 4·96	—1·074	6	12 7 12·3	14·960	6
3434	7	13 34·30	+1·922	5	37 44 31·7	14·988	5
3435	7·8	13 45·03	2·064	2	41 26 59·4	14·999	2
3436	7·8	13 51·61	1·927	4	37 49 32·5	15·005	4
3437	8	2786	105	..	963	489	5 Cephei α	3	14 1·89	1·418	13	28 13 0·6 } 0·0 }	15·015	33 } 47 }
3838	7	14 28·56	2·156	3	44 4 30·9	15·041	3
3439	7	14 34·08	2·263	2	47 39 38·0	15·046	2
3440	7	14 37·34	1·774	5	34 18 34·0	15·049	5
3441	6	15 24·69	2·071	6	41 25 17·5	15·095	6
3442	9	2788	117	..	964	..	6 Cephei	5·6	15 24·69	1·260	6	25 55 52·0	15·095	6
3443	116	..	..	..	.....	7·8	15 25·04	2·327	4	49 52 28·3	15·095	4
3444	7·8	15 26·27	2·333	4	50 6 37·5	15·096	4
3445	7	15 26·48	+1·777	5	34 15 52·2	15·096	6
3446	6·7	15 37·03	—1·130	6	11 48 59·1	15·106	6
3447	7·8	15 53·67	+2·070	3	41 18 58·6	15·122	4
3448	8	16 1·24	1·438	2	28 16 44·1	15·129	2
3449	7·8	16 15·75	2·231	4	46 17 27·5	15·143	4
3450	8	16 17·79	2·076	3	41 25 49·8	15·145	3
3451	8	17 31·88	+2·243	3	46 31 20·4	15·215	3
3452	..	2796	137	..	..	..	.....	5·6	17 33·96	—0·477	6	13 47 21·3	15·217	6
3453	6	17 36·10	+2·000	6	39 9 21·0	15·219	6
3454	9	17 55·54	2·240	2	46 21 57·7	15·237	2
3455	8	17 55·62	2·179	2	44 19 27·6	15·237	2
3456	9	18 0·68	2·242	2	46 25 7·7	15·243	2
3457	8	18 9·57	2·085	3	41 25 19·3	15·251	3
3458	7	18 17·45	2·088	5	41 29 31·4	15·258	5
3459	..	2792	140	..	..	..	.....	6	18 21·13	2·174	6	44 6 15·0	15·262	6
3460	8	18 52·99	2·246	4	46 25 19·4	15·292	4
3461	7	19 10·48	2·283	3	47 41 51·8	15·308	3
3462	7·8	19 32·36	1·964	3	37 57 25·5	15·329	3
3463	7	19 46·00	2·282	5	47 35 20·3	15·342	5
3464	8	19 48·15	2·097	4	41 32 22·8	15·344	4
3465	8	21 19 52·98	+2·236	3	45 56 10·1	—15·348	3

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3466	7.8	21 ^h 20 ^m 13.02 ^s	+1.973	3	38° 4' 20".8	-15".367	3
3467	156	6	20 29.47	1.968	6	37 55 23.0	15.382	6
3468	7.8	20 44.00	2.291	2	47 44 41.5	15.396	2
3469	7	21 58.14	2.244	5	45 54 13.2	15.465	5
3470	6	22 3.54	2.261	6	46 29 20.5	15.470	6
3471	166	..	..	..	.....	6	22 9.66	1.659	6	31 4 26.2	15.476	6
3472	..	2799	168	..	968	..	71 Cygni <i>g</i>	6	22 26.78	2.199	6	44 17 34.5	15.492	6
3473	7	22 35.57	1.832	6	34 26 6.3	15.500	6
3474	170	..	..	..	.....	6.7	22 54.33	1.878	6	35 24 34.5	15.517	6
3475	7	23 16.05	2.252	5	45 57 20.8	15.537	5
3476	7.8	23 33.83	+1.985	4	37 53 48.2	15.554	4
3477	7	23 48.41	-1.489	6	10 28 0.0	15.567	4
3478	6.7	23 54.65	-0.240	6	14 16 23.4	15.572	6
3479	7	23 55.93	-0.375	5	13 43 43.2	15.574	5
3480	6	24 0.71	+1.987	6	37 52 26.6	15.579	6
3481	..	2805	185	v. 46	..	..	7 Cephei	6	24 4.58	1.181	6	24 1 4.4	15.583	6
3482	7	24 15.04	2.315	5	48 7 58.9	15.592	5
3483	9	24 24.30	2.271	3	46 28 29.4	15.600	3
3484	9	24 30.20	2.275	2	46 36 7.4	15.606	2
3485	6	24 52.20	+2.021	6	38 38 30.5	15.626	6
3486	7	24 56.79	-0.087	6	14 51 12.3	15.630	6
3487	6	25 4.67	+2.006	6	38 12 53.9	15.637	6
3488	8	25 39.72	1.561	1	28 57 5.7	15.669	1
3489	5	25 46.12	1.647	6	30 22 32.5	15.674	6
3490	8	25 53.66	2.006	1	38 5 9.7	15.682	1
3491	8	25 54.96	2.003	1	38 0 7.1	15.682	1
3492	8	25 55.06	1.803	3	33 20 2.3	15.682	3
3493	11	2811	198	iv. 36	969	491	8 Cephei β	3	26 9.48	0.818	9	20 16 19.3 } 19.0 }	15.695	10 } 7 }
3494	8	26 46.08	1.807	3	33 17 58.1	15.729	3
3495	42	2810	202	..	971	..	73 Cygni ϵ	4	26 50.58	2.247	5	45 14 37.4	15.734	9
3496	8	26 55.72	1.979	3	37 14 58.5	15.738	3
3497	7.8	27 15.05	1.078	4	22 32 37.4	15.755	4
3498	7	27 17.72	2.409	1	51 24 26.7	15.758	1
3499	6.7	27 49.00	2.304	6	47 8 25.6	15.786	6
3500	6	21 27 55.10	+2.057	6	39 8 40.5	-15.791	6

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3501	..	2832	^h 21 ^m 28 ^s 10·93	^s —4·069	6	6° 33' 16"·5	—15"·806	7
3502	8·9	28 21·73	+1·082	2	22 27 39·7	15·816	2
3503	6	28 29·20	0·816	6	20 0 56·2	15·822	6
3504	7	28 52·04	2·414	1	51 22 1·2	15·843	1
3505	221	..	..	..	.....	7·8	28 54·04	1·594	7	29 2 37·7	15·844	7
3506	8·9	28 54·76	2·289	2	46 25 9·4	15·845	2
3507	8	28 59·01	+2·293	3	46 31 51·6	15·849	3
3508	972	..	.....	6	29 8·39	—0·108	5	14 25 55·6	15·857	5
3509	..	2818	222	..	..	493	74 Cygni	6	29 20·30	+2·393	6	50 26 7·6	15·868	6
3510	8·9	29 54·67	+1·833	4	33 22 48·6	15·898	4
3511	974	..	.....	5·6	30 0·18	—1·405	6	10 18 27·6	15·903	6
3512	228	..	..	..	.....	6	30 6·11	+2·422	6	51 32 1·2	15·908	6
3513	9	30 11·03	1·835	2	33 22 48·2	15·913	3
3514	7	30 11·27	2·287	5	46 9 7·5	15·913	5
3515	7	30 27·11	2·382	5	49 46 0·6	15·927	5
3516	7	30 29·71	1·256	5	24 7 7·5	15·929	5
3517	7	30 42·18	1·255	5	24 4 27·7	15·940	5
3518	7·8	30 42·79	+2·386	3	49 53 16·7	15·941	3
3519	7	32 42·86	—0·465	5	12 54 13·4	15·941	5
3520	8	30 43·01	+2·012	4	37 28 22·5	15·941	4
3521	8	30 48·18	2·420	4	51 20 32·2	15·945	4
3522	8·9	30 49·18	2·011	3	37 27 10·9	15·946	3
3523	6	31 19·44	1·989	6	36 48 34·0	15·973	6
3524	7	31 40·00	2·143	5	41 3 27·7	15·991	5
3525	7	31 41·28	2·137	2	40 53 29·1	15·992	2
3526	8·9	31 50·00	1·842	2	33 17 34·0	16·000	2
3527	6·7	31 52·41	1·138	7	22 37 53·9	16·002	7
3528	241	..	..	..	.....	7·8	32 6·95	1·591	3	28 33 16·9	16·014	3
3529	7	32 10·45	2·425	5	51 20 31·0	16·018	5
3530	7	32 12·28	2·013	5	37 16 29·3	16·019	5
3531	8·9	32 18·17	2·304	2	46 24 52·0	16·025	2
3532	6·7	32 33·66	2·305	5	46 25 27·7	16·039	5
3533	7	32 44·00	2·063	2	38 32 44·5	16·047	2
3534	..	2826	246	75 Cygni	6	32 44·49	2·336	6	47 35 4·0	16·048	6
3535	12	2830	247	..	979	..	9 Cephei	5·6	21 32 49·11	+1·611	11	28 46 21·7	—16·052	11

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3536	13	..	248	Cephei	6.7	21 ^h 33 ^m 4.15 ^s	+1.854	12	33° 22' 1".3	-16".064	12
3537	6	33 20.01	2.156	3	41 10 32.3	16.078	3
3538	8.9	33 20.03	1.157	2	22 40 6.8	16.078	2
3539	8.9	33 22.81	2.027	2	37 27 33.3	16.081	2
3540	9	33 33.31	1.858	2	33 22 23.8	16.090	2
3541	8	33 35.15	2.432	3	51 23 10.2	16.091	3
3542	8.9	33 47.67	1.650	3	29 18 3.8	16.103	3
3543	..	2831	252	..	..	..	76 Cygni	6	33 56.09	2.402	11	50 3 11.2	16.110	11
3544	6	34 25.98	1.976	6	35 59 17.6	16.136	6
3545	8	34 27.96	1.860	4	33 16 39.7	16.137	4
3546	7.8	34 29.96	2.434	4	51 20 12.9	16.139	4
3547	..	2836	259	..	..	..	77 Cygni	6	34 44.61	+2.399	13	49 47 10.6	16.152	13
3548	6	34 46.98	-8.965	7	3 46 17.2	16.154	7
3549	261	..	..	..	.....	7.8	34 54.66	+2.400	9	49 48 58.3	16.160	9
3550	7	34 56.11	1.743	5	31 6 33.8	16.162	5
3551	8.9	35 2.11	1.664	3	29 21 23.8	16.167	3
3552	7	35 2.29	2.367	6	48 25 21.7	16.167	6
3553	44	2845	263	..	982	..	80 Cygni π^1	4	35 21.25	2.117	9	39 40 26.1	16.183	12
3554	7	35 28.04	2.080	6	38 34 19.5	16.189	6
3555	..	2841	265	..	..	..	B. F. 2976	6.7	35 28.82	2.400	9	49 42 33.9	16.190	9
3556	35 44.29	2.171	2	41 15 52.0	16.203	2
3557	277	..	..	..	.....	7.8	36 27.99	1.868	4	33 7 45.0	16.241	4
3558	..	2854	..	..	..	497	.....	7	36 28.65	0.862	4	19 32 53.4	16.242	4
3559	6.7	36 39.96	2.083	7	38 27 35.8	16.251	7
3560	8	36 59.39	0.855	2	19 26 13.2	16.267	2
3561	6.7	37 2.53	1.799	6	31 35 45.5	16.270	6
3562	8.9	37 2.81	2.443	2	51 19 32.0	16.270	2
3563	6.7	37 14.02	2.262	5	44 0 27.6	16.280	5
3564	6	38 31.65	2.099	12	38 36 15.2	16.345	11
3565	6	38 44.52	2.368	6	47 48 47.5	16.356	6
3566	15	2856	292	iii.54	989	..	11 Cephei	5	39 5.17	0.899	5	19 33 43.5	16.374	4
3567	45	2855	295	..	990	..	81 Cygni π^2	5	39 46.79	2.202	3	41 33 57.6	16.409	7
3568	7.8	39 51.15	2.112	2	38 45 3.8	16.412	2
3569	14	2857	297	..	991	501	10 Cephei	5	39 57.94	1.727	6	29 45 11.3	16.418	6
3570	8	21 40 12.34	+2.351	2	46 51 53.6	-16.430	2

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3571	6	^h 21 ^m 40 ^s 27·19	+2·469	6	51° 55' 20"·9	-16"·442	6
3572	16 Cephei	2861	302	iii.55	992	..	78 Draconis	5	40 42·81	0·794	6	18 33 1·3	16·456	6
3573	7	40 45·38	2·468	2	51 47 48·4	16·457	2
3574	7·8	41 38·25	2·473	2	51 52 53·1	16·501	2
3575	9	41 45·16	2·043	2	36 29 39·9	16·507	2
3576	..	2862	306	..	..	..	12 Cephei	6	41 49·38	1·765	6	30 11 10·1	16·511	6
3577	6·7	42 3·26	2·204	6	41 12 16·1	16·522	6
3578	7	42 17·79	2·179	7	40 22 1·2	16·535	7
3579	7	42 35·55	2·467	2	51 26 30·7	16·549	2
3580	313	..	..	..	.....	7	42 39·80	2·365	5	46 59 34·0	16·553	5
3581	9	42 51·84	2·071	2	37 3 36·0	16·563	2
3582	8·9	42 54·44	2·051	2	36 30 5·7	16·564	2
3583	8·9	42 58·51	2·058	3	36 41 10·5	16·568	3
3584	6	43 13·87	2·467	6	51 20 57·4	16·588	6
3585	7·8	43 18·68	2·222	3	41 34 32·5	16·585	3
3586	6	43 18·87	2·114	6	38 11 11·2	16·585	6
3587	8·9	43 25·09	2·060	4	36 38 37·8	16·589	4
3588	6	43 27·32	1·511	5	25 42 43·5	16·591	5
3589	7·8	43 36·14	2·220	4	41 26 48·3	16·598	4
3590	994	..	.....	6	43 37·77	1·089	6	20 43 42·9	16·600	6
3591	6	44 42·48	1·404	7	24 5 22·1	16·652	7
3592	7	44 44·87	2·255	5	42 27 5·9	16·655	5
3593	8	44 54·46	2·253	3	42 20 22·7	16·662	2
3594	7·8	44 56·59	1·522	3	25 39 7·6	16·664	3
3595	7	45 19·73	2·431	5	49 17 10·8	16·683	5
3596	328	..	..	..	.....	7·8	45 24·71	+1·747	4	29 16 21·1	16·687	4
3597	45 29·89	-2·233	4	7 56 50·5	16·691	4
3598	7·8	45 44·81	+2·017	4	35 5 53·4	16·703	4
3599	..	2866	..	..	..	..	.....	7	45 45·65	2·017	5	35 5 35·9	16·704	5
3600	7	45 53·17	2·060	5	36 12 29·0	16·709	5
3601	331	..	..	..	.....	7	45 59·41	2·047	5	35 51 4·0	16·714	5
3602	8	46 15·90	0·945	2	19 7 33·5	16·728	2
3603	7·8	46 30·15	1·572	4	26 10 9·6	16·739	4
3604	7·8	46 34·17	1·422	5	24 3 3·0	16·742	5
3605	..	2867	335	7	21 46 40·89	+2·090	5	36 53 40·9	-16·748	5

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3606	17	2868	336	Cephei	5	21 ^h 46 ^m 43 ^s ·21	+2·007	6	34° 40' 58"·5	-16"·749	6
3607	7	46 50·30	1·563	5	25 59 24·1	16·755	5
3608	7	46 51·89	1·505	5	25 8 14·1	16·757	5
3609	6·7	47 10·95	1·702	5	28 10 50·2	16·772	5
3610	7	47 52·78	2·299	6	43 26 43·1	16·805	6
3611	..	2871	346	..	..	..	.....	7	48 15·07	2·103	5	36 57 54·7	16·822	5
3612	7·8	48 20·79	1·719	5	28 16 54·5	16·830	5
3613	8	48 25·59	1·720	4	28 17 43·3	16·831	4
3614	8	48 30·68	2·096	3	36 43 11·1	16·835	3
3615	8	48 36·43	0·964	3	19 0 31·3	16·839	3
3616	8	48 37·83	1·783	3	29 24 54·2	16·841	3
3617	6	48 48·01	2·130	12	37 39 17·9	16·849	12
3618	7·8	48 53·41	2·304	7	43 25 46·2	16·852	4
3619	7·8	49 4·92	2·304	4	43 23 51·8	16·862	3
3620	8	49 18·03	1·006	2	19 17 9·2	16·872	2
3621	6	49 39·52	1·788	6	29 21 25·5	16·888	6
3622	9	49 39·56	2·130	2	37 28 32·6	16·890	2
3623	7·8	49 58·07	2·414	4	47 40 59·0	16·903	4
3624	9	50 0·75	2·130	2	37 26 21·3	16·906	2
3625	7	50 11·45	0·974	5	18 54 25·1	16·914	5
3626	7	50 12·75	2·226	5	40 24 44·9	16·915	5
3627	7·8	50 15·41	2·312	5	43 28 44·1	16·917	5
3628	7	50 19·68	2·417	4	47 45 10·2	16·921	4
3629	7·8	50 20·80	1·543	5	25 10 31·5	16·921	5
3630	7	50 29·49	2·416	4	47 39 51·3	16·928	4
3631	..	2880	357	iii.56	..	..	79 Draconis	7	50 30·24	0·757	5	17 11 47·1	16·928	5
3632	8	50 47·31	2·227	2	40 20 27·6	16·942	2
3633	360	..	..	..	.....	5	51 17·50	1·688	6	27 16 35·6	16·965	6
3634	8	51 31·28	1·817	2	29 36 28·3	16·976	2
3635	7·8	51 55·39	1·570	5	25 18 36·6	16·995	5
3636	7·8	52 7·42	1·543	5	24 52 42·2	17·004	5
3637	7	52 19·71	1·535	5	24 44 53·4	17·014	5
3638	368	..	..	..	.....	7·8	52 26·31	2·278	4	41 47 0·4	17·019	4
3639	7	52 32·16	1·539	5	24 45 59·2	17·024	5
3640	7·8	21 53 7·63	+2·284	4	41 51 26·2	-17·051	4

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3641	9	21 ^h 53 ^m 8 ^s ·43	+2·130	2.	36° 50' 5"·2	-17"·051	2
3642	8	53 12·24	1·814	4.	29 14 40·3	17·054	4
3643	8	53 15·48	2·130	3	36 48 0·1	17·056	3
3644	6·7	53 18·05	1·760	5	28 12 37·8	17·059	5
3645	8	53 23·52	2·099	4	35 53 18·9	17·063	4
3646	8·9	53 47·00	1·761	1.	28 8 57·9	17·081	1
3647	53 54·48	+2·407	1	46 34 15·7	17·087	1
3648	..	2894	..	..	..	..	.....	7·8	54 1·41	-0·410	5	11 21 1·0	17·092	5
3649	9	54 8·25	+2·134	2	36 45 4·5	17·097	2
3650	7·8	54 25·13	2·409	1	46 34 7·1	17·110	1
3651	8·9	54 42·91	2·143	4	36 55 0·7	17·124	4
3652	383	..	..	..	.....	6	54 53·63	2·181	7	38 1 50·1	17·133	7
3653	6	54 56·90	2·446	6	48 5 58·4	17·135	6
3654	7·8	54 59·05	1·786	5	28 25 25·8	17·136	5
3655	6	55 17·11	2·406	6	46 15 46·2	17·150	6
3656	8	55 34·58	1·840	3	29 21 24·0	17·162	3
3657	..	2892	385	..	..	..	14 Cephei	6	55 41·78	2·002	6	32 54 48·0	17·168	6
3658	386	..	..	..	.....	7	55 42·45	2·001	4	32 51 53·3	17·168	4
3659	8·9	55 43·44	2·408	2	46 15 35·6	17·169	2
3660	..	2897	..	..	..	..	.....	6·7	55 57·12	0·653	7	15 54 45·3	17·180	7
3661	8·9	56 1·56	1·581	2	24 49 52·5	17·183	2
3662	7·8	56 8·94	2·408	3	46 11 26·3	17·189	3
3663	7·8	56 10·67	2·412	3	46 19 30·8	17·190	3
3664	392	..	..	..	.....	7	56 24·66	2·418	7	46 34 19·4	17·201	5
3665	19	2900	394	iii.57	997	504	16 Cephei	5·6	56 28·64	0·921	4	17 43 24·3	17·204	4
3666	7·8	56 34·33	+2·126	9	36 2 11·0	17·207	9
3667	6	56 53·63	-0·586	6	10 35 52·9	17·222	6
3668	8·9	57 6·39	+1·609	5	25 4 42·0	17·231	5
3669	6	57 25·34	2·355	6	43 41 11·8	17·245	6
3670	..	2902	399	..	..	..	15 Cephei	6	57 42·80	1·941	6	31 6 14·1	17·258	6
3671	7	57 44·47	1·601	6	24 51 13·9	17·259	6
3672	6·7	57 44·77	2·369	6	44 10 27·1	17·260	6
3673	7·8	58 0·42	2·237	4	39 13 6·2	17·271	4
3674	401	6	58 1·51	1·942	6	31 3 7·1	17·272	6
3675	404	6·7	21 58 9·57	+2·409	6	45 48 29·1	-17·278	6

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3676	..	2906	18 Cephei	5	21 ^h 58 ^m 11 ^s ·49	+1 ^s ·783	6	27° 48' 6"	-17 ^{''} ·278	6
3677	7	58 14·36	2·425	2	46 28 0·5	17·281	2
3678	18	2907	408	..	1001	..	17 Cephei ξ	5	58 17·24	1·699	5	26 17 43·2	17·283	28
3679	6	58 20·91	2·412	6	45 54 41·8	17·286	1
3680	7·8	58 25·25	2·335	5	42 41 23·2	17·289	6
3681	6·7	58 31·59	2·408	6	45 40 21·8	17·294	5
3682	8	58 44·78	1·880	3	29 35 1·1	17·304	2
3683	8·9	59 0·68	1·646	3	25 19 59·2	17·316	3
3684	8·9	59 1·95	1·637	3	25 10 56·8	17·316	3
3685	..	2911	415	..	..	..	20 Cephei	6	59 14·02	1·811	6	28 8 19·5	17·325	6
3686	20	2910	416	..	..	..	19 Cephei	6	59 17·54	1·839	6	28 38 32·1	17·327	6
3687	7·8	59 31·17	2·243	5	39 7 3·9	17·338	5
3688	8·9	59 32·30	1·649	3	25 16 34·4	17·338	3
3689	8	21 59 51·29	2·205	3	37 46 32·0	17·352	3
3690	6·7	22 0 24·33	2·203	6	37 37 1·6	17·376	6
3691	21	..	4	..	..	..	Cephei	6	0 46·16	2·009	6	32 5 0·3	17·393	6
3692	6	1 10·54	2·358	6	42 59 34·7	17·410	6
3693	8	1 16·45	2·100	2	34 20 56·5	17·414	2
3694	8	..	..	..	.....	6	1 53·63	2·470	6	47 44 35·2	17·442	6
3695	8·9	1 53·85	1·918	2	29 48 17·0	17·442	2
3696	8·9	2 15·52	1·923	2	29 50 47·8	17·457	2
3697	8	2 22·38	1·917	5	29 40 46·2	17·462	5
3698	8	2 37·04	1·929	4	29 54 24·2	17·473	4
3699	7	3 1·87	2·368	4	43 1 2·4	17·490	4
3700	6	3 10·43	2·479	6	47 54 3·2	17·497	6
3701	7·8	3 10·94	1·141	5	18 42 4·3	17·497	5
3702	iii.58	..	..	.....	7·8	3 36·50	1·131	5	18 33 27·8	17·515	5
3703	5	3 47·59	2·298	6	40 6 43·2	17·523	6
3704	24	..	..	..	.....	6·7	4 3·09	1·787	6	26 48 34·9	17·534	6
3705	7·8	4 3·37	2·257	5	38 37 15·9	17·534	5
3706	22	2925	26	..	1007	..	21 Cephei ζ	4	4 16·48	+2·062	7	32 43 56·4	17·543	9
3707	6	4 25·24	-1·499	6	8 2 54·3	17·549	2
3708	7	4 27·10	+2·256	7	38 30 14·8	17·551	5
3709	..	2935	6	4 31·26	-1·495	6	8 2 54·3	17·554	7
3710	8·9	22 4 40·71	+2·170	2	35 39 59·4	-17·561	5

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3711	7	^h 22 ^m 4 ^s 46.71	+0.852	5	16° 11' 45.8	-17.565	5
3712	..	2926	6	4 58.28	2.118	6	34 6 10.2	17.573	6
3713	..	2927	34	..	..	..	22 Cephei λ	6	5 4.60	2.020	6	31 31 11.8	17.577	6
3714	7.8	5 23.77	2.181	5	35 50 16.2	17.591	5
3715	7	5 24.33	2.037	6	31 51 19.5	17.591	6
3716	1	..	36	..	1009	511	B. F. 3044	5	5 44.10	2.555	6	51 13 26.7	17.605	6
3717	Lac.	..	..	..	..	..	.....	6.7	6 1.16	2.442	6	45 29 52.7	17.617	6
3718	25	2932	40	iii.59	1008	..	24 Cephei	5	6 7.15	1.175	6	18 35 36.4	17.621	6
3719	1010	..	.....	6	6 16.92	1.395	7	20 48 15.5	17.628	7
3720	7.8	6 17.95	2.180	5	35 37 26.6	17.628	5
3721	7.8	6 24.15	2.176	5	35 28 3.5	17.632	5
3722	7.8	6 27.25	2.271	4	38 32 48.1	17.634	4
3723	..	2934	45	iii.60	..	..	80 Draconis	6	6 29.79	1.204	6	18 49 22.3	17.636	6
3724	7.8	6 38.70	2.038	4	31 38 25.8	17.642	4
3725	6	6 46.25	2.497	6	47 59 6.8	17.647	6
3726	7.8	7 9.45	2.272	4	38 25 35.4	17.663	4
3727	8.9	7 22.35	2.183	3	35 29 24.7	17.672	3
3728	23	2937	54	..	1013	..	23 Cephei ϵ	4	8 3.12	2.135	6	33 54 ^{3.5} 2.6	17.701	16}
3729	55	..	..	..	.....	6.7	8 10.45	2.460	6	45 51 14.8	17.706	16}
3730	7.8	8 31.22	2.062	2	31 49 35.4	17.720	2
3731	61	..	..	..	.....	7	9 35.87	2.141	5	33 43 29.6	17.764	5
3732	8	9 57.76	2.078	1	31 56 10.2	17.779	1
3733	64	..	..	..	.....	8	10 2.68	1.223	4	18 28 44.4	17.782	4
3734	7.8	10 19.24	2.362	4	41 5 10.3	17.793	4
3735	7	10 25.83	0.688	11	14 28 52.4	17.797	11
3736	8	10 42.19	2.531	2	48 48 19.5	17.808	2
3737	8.9	11 0.49	2.216	2	35 40 0.4	17.820	2
3738	6	11 18.37	2.295	6	38 17 35.0	17.832	6
3739	6	11 37.07	1.752	7	24 49 10.5	17.845	7
3740	7.8	11 45.07	2.298	2	38 16 36.3	17.850	2
3741	..	2947	75	..	..	..	25 Cephei	6	12 1.40	1.934	6	28 8 44.3	17.861	6
3742	7	12 13.69	2.430	5	43 28 41.2	17.869	5
3743	8.9	12 31.50	2.376	1	41 6 59.3	17.881	1
3744	8.9	13 7.45	2.376	1	40 58 18.4	17.904	1
3745	8.9	22 13 8.45	+2.389	1	41 28 52.1	-17.905	1

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3746	80	5	^h 22 ^m 13 ^s 8.86	+2.179	5	34° 2' 5".8	-17".906	5
3747	5	2948	79	..	1019	..	2 Lacertæ	5	13 11.54	2.455	3	44 25 0.0	17.907	7
3748	8.9	13 19.69	2.276	3	37 8 15.4	17.913	3
3749	8.9	13 30.62	2.233	3	35 39 23.5	17.920	3
3750	6.7	13 43.73	2.546	6	48 52 34.6	17.929	6
3751	6	13 57.75	2.516	4	47 12 31.8	17.938	4
3752	7.8	13 59.42	2.215	4	34 58 6.5	17.938	4
3753	8	15 17.97	2.554	2	48 53 53.1	17.989	2
3754	8.9	15 37.25	0.991	3	15 48 4.4	18.001	3
3755	8	15 50.66	2.252	3	35 43 29.7	18.010	3
3756	96	..	..	..	.....	7	15 58.10	0.796	6	14 27 58.2	18.014	6
3757	92	..	..	..	.....	6.7	15 59.80	2.231	6	34 59 42.3	18.016	6
3758	5.6	16 0.58	2.189	6	33 40 24.6	18.016	6
3759	6.7	16 4.69	2.365	6	39 45 47.3	18.020	6
3760	6	16 5.67	1.769	7	24 15 5.0	18.020	7
3761	26 Cephei.	2956	95	..	1021	514	3 Lacertæ	4	16 6.22	2.338	6	38 43 ^{10.8} ^{11.6}	18.021	9 44
3762	7	16 25.41	0.882	5	14 56 33.1	18.030	5
3763	8.9	16 29.69	2.258	3	35 45 10.2	18.034	3
3764	..	2958	99	..	1022	..	4 Lacertæ	5	16 49.82	2.411	5	41 29 2.4	18.047	6
3765	8	17 2.44	2.491	4	45 10 35.8	18.055	4
3766	7	17 9.05	0.879	5	14 49 54.9	18.060	5
3767	6	17 28.34	2.372	6	39 42 26.3	18.072	6
3768	8.9	17 40.26	2.269	3	35 50 8.7	18.079	3
3769	7.8	17 46.16	2.395	5	40 33 39.3	18.084	5
3770	8	18 15.50	0.655	2	13 22 49.5	18.101	2
3771	7.8	18 23.62	2.312	5	37 8 50.2	18.107	5
3772	7.8	18 31.85	2.309	5	37 1 8.7	18.112	5
3773	8.9	18 35.88	2.314	3	37 10 55.6	18.114	3
3774	8.9	18 53.69	2.315	3	37 8 24.7	18.126	3
3775	8	19 4.51	2.308	4	36 51 37.2	18.132	4
3776	8.9	19 10.29	0.917	3	14 49 22.8	18.136	3
3777	115	..	..	..	.....	6	19 25.70	1.983	7	27 38 10.1	18.146	7
3778	7.8	19 27.45	1.082	8	15 57 28.1	18.147	8
3779	7	20 7.38	2.383	5	39 28 27.3	18.171	5
3780	7	22 20 17.95	+2.382	5	39 23 27.8	-18.178	5

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3781	8.9	^h 22 ^m 20 ^s 43.28	+1.612	3.	21° 4' 15.6"	-18.193	3
3782	7	20 47.54	2.392	4	39 39 41.6	18.196	4
3783	..	2969	128	..	..	..	26 Cephei	6	20 59.59	1.912	6.	25 50 5.1	18.204	6
3784	8.9	21 11.45	1.135	3	16 6 56.6	18.211	3
3785	8.9	21 16.90	2.413	3	40 25 30.3	18.214	3
3786	7	21 25.82	2.391	4	39 27 41.4	18.220	4
3787	..	2970	132	..	..	..	5 Lacertæ	4	21 37.64	2.477	3.	43 15 45.4	18.227	6
3788	8	21 49.58	1.149	3.	16 8 15.2	18.233	3
3789	6	21 56.79	2.325	10.	36 43 25.2	18.238	10
3790	7.8	22 2.27	2.089	5.	29 30 54.8	18.241	5
3791	27	2973	135	..	1027	519	27 Cephei δ	4	22 7.95	2.201	5.	32 33 16.9	18.245	6
3792	..	2971	136	..	..	..	6 Lacertæ	5	22 18.26	2.568	4.	47 50 51.8	18.251	6
3793	137	..	..	..	.....	7	22 18.54	2.375	5.	38 33 19.0	18.251	5
3794	8	22 34.96	2.610	4.	50 15 7.0	18.261	4
3795	9	22 42.40	0.982	3.	14 47 23.5	18.265	3
3796	7	22 50.48	0.785	5	13 31 59.3	18.271	5
3797	8.9	23 7.97	2.425	3	40 27 1.6	18.281	3
3798	8	23 20.68	2.430	4	40 36 29.6	18.289	4
3799	28 Cephei	2975	141	..	1028	..	7 Lacertæ	4	23 28.85	2.433	7	40 41 29.1 } 29.8 }	18.293	26 } 38 }
3800	8	23 40.88	2.427	4	40 22 43.3	18.301	4
3801	8	23 44.70	2.629	2	51 10 30.1	18.303	2
3802	7	23 49.97	2.100	8	29 20 57.3	18.306	8
3803	8	24 1.64	2.618	4	50 21 28.7	18.313	4
3804	6	24 3.24	2.631	5	51 11 39.1	18.314	6
3805	7.8	24 19.43	1.621	8	20 32 13.6	18.323	8
3806	7.8	24 46.03	1.648	8	20 48 5.1	18.339	8
3807	6.7	24 47.69	2.351	6	36 56 18.8	18.340	6
3808	7.8	24 59.16	2.638	4	51 24 3.9	18.346	4
3809	..	2980	150	ii.51.	1029	..	28 Cephei	5	25 9.65	0.579	6	12 10 56.4	18.353	6
3810	7	25 14.03	2.620	5	50 9 28.7	11.355	5
3811	8	25 16.91	2.442	4	40 37 10.1	18.357	4
3812	6.7	25 34.71	2.522	6	44 24 41.9	18.367	6
3813	7.8	25 35.99	1.034	5	14 44 15.9	18.368	5
3814	6	26 0.06	0.126	7	10 16 12.5	18.382	7
3815	7.8	22 26 8.85	+2.625	5	50 12 11.5	-18.387	5

No.	Hevelius.	Bessel's Bradley.	Piazzi.	Wollaston.	Pond.	Argelander.	Flamsteed's No. and Bayer's Character.	Magnitude.	Right Ascension. Jan. 1, 1810.	Annual Precession.	No. of Obs.	North Polar Distance. Jan. 1, 1810.	Annual Precession.	No. of Obs.
3816	156	..	..	..	.....	5.6	^h 22 ^m 26 ^s 19.67	+2.291	6	34° 21' 17.7"	-18.394	6
3817	8.9	26 28.63	2.627	2	50 14 46.4	18.399	2
3818	8.9	26 31.13	2.453	4	40 45 43.6	18.400	4
3819	7.8	26 37.22	+2.363	3	36 53 33.4	18.403	3
3820	32	2993	165	i. 44	..	..	Cephei	5	26 41.10	-3.168	7	4 51 16.8	18.406	7
3821	8	26 49.79	+0.847	3	13 23 30.2	18.411	3
3822	159	..	..	..	.....	7	27 1.28	2.647	3	51 23 40.2	18.418	3
3823	6	27 5.71	+2.125	5	29 12 5.8	18.420	5
3824	..	2997	167	i. 45	..	..	.....	7	27 18.00	-3.284	3	4 44 23.0	18.427	3
3825	..	2982	163 164	..	..	..	8 Lacertæ	6	27 26.05	+2.648	6	51 20 47.3	18.432	6
3826	iv. 37	1032	..	.....	6.7	27 32.91	1.706	7	21 4 7.1	18.436	7
3827	1033	..	.....	6	27 54.73	1.678	6	20 36 22.0	18.447	6
3828	8.9	27 55.76	1.700	3	20 53 39.5	18.449	3
3829	6	28 1.03	2.466	6	40 54 38.3	18.453	6
3830	7.8	28 2.88	2.395	7	37 46 45.8	18.454	6
3831	..	2988	168	ii. 52	..	..	29 Cephei ϵ	6	28 5.42	0.645	6	12 9 3.2	18.456	6
3832	8.9	28 17.14	2.296	3	33 59 8.5	18.462	3
3833	7.8	28 21.63	2.301	5	34 7 3.9	18.464	5
3834	ii. 53	1035	..	.....	7	28 53.22	1.102	6	14 45 7.7	18.483	6
3835	8	29 7.07	2.450	2	39 52 19.7	18.490	2
3836	8	29 12.62	2.373	3	36 33 31.7	18.493	3
3837	8	29 25.67	2.448	2	39 41 48.4	18.500	2
3838	8.9	29 31.46	2.309	2	34 4 39.5	18.503	2
3839	29	2987	173	..	..	..	9 Lacertæ	5.6	29 35.57	2.444	6	39 25 59.3	18.505	7
3840	Cephei	..	..	..	..	..	.....	9	29 42.40	1.697	2	20 31 16.0	18.509	2
3841	177	..	..	..	.....	6	30 5.30	2.571	6	45 48 6.9	18.522	6
3842	8	30 11.36	1.720	3	20 44 25.3	18.525	3
3843	8	30 27.97	2.588	4	46 40 28.5	18.534	4
3844	181	..	..	..	10 Lacertæ	5.6	30 45.16	2.671	6	51 56 8.6	18.544	6
3845	7	30 57.07	2.084	3	27 13 0.4	18.550	2
3846	31	2994	185	iii. 61	1037	..	31 Cephei	6	31 3.76	1.448	6	17 20 28.5	18.554	6
3847	6.7	31 11.19	2.325	6	34 11 20.7	18.558	6
3848	7	31 38.12	2.466	5	39 50 3.6	18.573	5
3849	6.7	31 39.10	2.641	7	49 40 23.6	18.573	7
3850	30	2996	190	..	1038	..	30 Cephei	5.6	22 31 55.64	+2.102	7	27 24 3.6	-18.583	7

No.	Hevelius.	Bessel's Bradley.	Piazzi.	Wollaston.	Pond.	Argelander.	Flamsteed's No. and Bayer's Character.	Magnitude.	Right Ascension. Jan. 1, 1810.	Annual Precession.	No. of Obs.	North Polar Distance. Jan. 1, 1810.	Annual Precession.	No. of Obs.
3851	..	2995	192	..	..	..	11 Lacertæ	5	^h 22 ^m 32 ^s 12.07	+2.597	13	[°] 46 ['] 42 ^{''} 46.1 45.7	-18.592	16 37
3852	8.9	32 13.35	2.460	2	39 23 9.1	18.592	2
3853	8	32 26.14	2.462	5	39 26 32.0	18.599	5
3854	7	32 36.33	2.412	5	37 8 31.1	18.605	5
3855	197	..	..	..	.....	6	32 53.70	2.589	6	45 58 54.6	18.615	6
3856	..	3002	199	..	..	..	12 Lacertæ	6	32 59.39	2.664	6	50 45 52.2	18.617	6
3857	6	33 6.57	1.298	6	15 36 56.8	18.621	6
3858	5.6	33 7.76	2.645	6	49 26 39.1	18.622	6
3859	7	33 10.78	2.463	5	39 13 54.1	18.624	5
3860	7.8	33 31.31	2.483	2	40 3 40.6	18.634	2
3861	8	34 0.28	2.559	2	43 55 26.4	18.650	2
3862	7	34 36.30	2.424	5	37 4 58.4	18.669	5
3863	8.9	34 45.49	2.366	2	34 40 56.4	18.674	2
3864	6.7	34 53.45	2.563	5	43 49 25.9	18.678	5
3865	7.8	35 9.77	2.408	4	36 14 7.3	18.687	4
3866	7	35 13.04	2.584	5	44 57 59.6	18.689	5
3867	210	..	..	..	.....	6.7	35 19.09	2.610	4	46 27 46.2	18.692	4
3868	8.9	35 22.97	2.484	4	39 30 48.6	18.694	4
3869	6	35 31.52	2.685	7	51 31 38.7	18.698	7
3870	7.8	35 37.01	2.087	3	26 7 14.6	18.702	3
3871	..	3005	211	..	..	..	13 Lacertæ	6	35 38.09	2.653	6	49 10 30.9	18.702	6
3872	7	35 38.65	2.371	5	34 35 13.8	18.703	5
3873	7.8	36 17.81	2.693	9	51 47 35.6	18.723	9
3874	7.8	36 19.83	2.490	5	39 33 0.1	18.724	5
3875	7.8	36 25.52	2.184	3	28 19 25.3	18.727	3
3876	8	36 41.79	2.443	4	37 14 16.0	18.736	4
3877	7	36 55.48	2.472	5	38 28 44.7	18.743	5
3878	8.9	37 23.88	2.496	3	39 30 29.5	18.757	3
3879	8	37 32.86	2.427	3	36 16 36.6	18.761	3
3880	8	37 35.64	2.501	4	39 40 24.9	18.763	4
3881	6.7	37 36.07	2.340	6	32 50 31.6	18.763	6
3882	5.6	37 45.74	2.622	6	46 27 11.0	18.768	6
3883	7	37 46.98	1.500	5	16 39 43.2	18.768	5
3884	6	38 3.51	2.597	13	44 46 53.6	18.777	12
3885	7.8	22 38 33.93	+2.350	3	32 55 22.2	-18.793	3

No.	Hevelius.	Bessel's Bradley.	Piazz.	Wollaston.	Pond.	Argelauder.	Flamsteed's No. and Bayer's Character.	Magnitude.	Right Ascension. Jan. 1, 1810.	Annual Precession.	No. of Obs.	North Polar Distance. Jan. 1, 1810.	Annual Precession.	No. of Obs.
3886	7	^h 22 ^m 38 ^s 43.03	+2.432	5	36° 7' 34"0	-18.797	5
3887	6	38 46.32	0.326	5	9 36 6.2	18.799	4
3888	7.8	39 5.97	2.603	2	44 47 27.9	18.809	2
3889	8	39 16.64	2.110	4	25 42 15.0	18.814	4
3890	7.8	39 23.14	2.440	4	36 14 49.3	18.817	4
3891	7	39 33.15	1.523	5	16 34 13.7	18.822	5
3892	..	3014	..	..	..	..	.....	6.7	39 51.80	2.350	6	32 31 1.4	18.832	6
3893	7	40 45.58	1.534	4	16 26 41.8	18.857	4
3894	6.7	40 55.81	2.459	5	36 35 12.5	18.863	5
3895	7	41 1.85	2.140	6	25 56 20.4	18.866	6
3896	7	41 12.47	2.532	5	40 1 4.5	18.871	5
3897	6.7	41 36.12	2.227	4	28 3 39.8	18.883	4
3898	..	3018	233	..	..	..	14 Lacertæ	6	41 48.76	2.680	6	49 3 0.2	18.889	6
3899	8	41 55.98	2.457	3	36 9 18.4	18.893	3
3900	5	41 57.11	2.433	7	35 6 8.4	18.894	7
3901	7	42 2.68	2.543	5	40 19 35.5	18.896	5
3902	7	42 11.77	0.681	11	10 33 46.7	18.900	10
3903	8.9	42 23.66	2.640	2	46 3 57.6	18.906	2
3904	iv.38	..	..	.....	6.7	42 33.93	1.995	6	22 26 12.8	18.911	6
3905	33	3022	238	v.48	1048	529	32 Cephei	4	42 56.50	2.114	8	24 47 48.2	18.922	14
3906	7	43 29.11	2.619	5	44 16 9.4	18.938	5
3907	1 Andr.	3023	240	..	..	..	15 Lacertæ	5	43 29.13	2.670	4	47 41 41.5	18.938	5
3908	8	43 42.12	2.711	2	50 44 28.8	18.944	2
3909	8.9	43 56.07	2.658	3	46 43 12.4	18.951	3
3910	..	3028	..	..	1050	..	.....	5	43 59.15	2.293	5	29 18 40.6	18.952	5
3911	7.8	44 16.50	2.254	4	28 1 54.5	18.960	4
3912	6.7	44 26.00	2.627	5	44 27 29.6	18.965	5
3913	7.8	44 28.27	2.558	5	40 18 6.0	18.966	5
3914	6	44 31.63	2.716	6	50 50 23.5	18.968	6
3915	7	44 40.17	2.565	5	40 35 41.6	18.972	5
3916	8.9	44 44.61	2.715	1	50 40 23.4	18.974	1
3917	8.9	44 52.68	2.717	1	50 44 25.1	18.978	1
3918	6	45 11.59	2.658	6	46 15 31.9	18.986	6
3919	6	45 25.35	2.718	4	50 38 2.6	18.993	4
3920	8.9	22 45 29.49	+2.601	2	42 26 5.9	-18.995	2

No.	Hevelius.	Bessel's Bradley.	Piazzi.	Wollaston.	Pond.	Argelander.	Flamsteed's No. and Bayer's Character.	Magnitude.	Right Ascension. Jan. 1, 1810.	Annual Precession.	No. of Obs.	North Polar Distance. Jan. 1, 1810.	Annual Precession.	No. of Obs.
3921	8	^h 22 ^m 46 ^s 45.11	+2.594	3	41° 32' 10".7	-19.029	3
3922	6.7	47 11.06	0.844	12	10 38 22.3	19.041	12
3923	7	47 14.84	2.675	5	46 42 9.0	19.043	5
3924	8.9	47 18.50	2.421	2	32 48 2.3	19.044	2
3925	8.9	47 19.60	2.542	3	38 23 16.9	19.045	3
3926	..	3034	255	..	..	..	16 Lacertæ	6	47 44.26	2.713	6	49 24 29.5	19.057	6
3927	8.9	47 51.74	2.696	2	48 0 2.6	19.060	2
3928	34	3038	258	i. 46	..	..	Cephei	5.6	47 52.99	0.068	4	7 51 17.9	19.061	6
3929	8.9	48 3.41	2.584	4	40 28 17.6	19.065	4
3930	B. F. 3146	6.7	48 7.85	2.599	6	41 16 42.2	19.068	6
3931	7	48 16.24	2.430	5	32 48 59.8	19.071	5
3932	8.9	48 25.36	2.698	1	47 59 51.5	19.075	1
3933	B. F. 3147	6	48 42.14	2.619	6	42 19 42.9	19.083	6
3934	7	48 48.51	2.700	6	48 0 4.5	19.086	6
3935	260	..	..	..	.....	7.8	48 51.08	2.745	5	51 37 28.8	19.087	5
3936	261	..	..	..	.....	7	48 55.64	2.746	5	51 42 17.8	19.089	5
3937	7	49 15.41	2.394	4	31 3 6.0	19.097	4
3938	8.9	50 15.74	2.610	3	41 9 44.1	19.124	3
3939	7.8	50 17.38	2.597	4	40 18 57.9	19.125	4
3940	7	50 58.62	2.567	5	38 21 46.8	19.142	5
3941	276	..	..	..	.....	7.8	50 59.05	2.574	5	38 42 44.7	19.143	5
3942	8	50 59.90	0.984	4	10 46 24.7	19.143	4
3943	8	51 6.02	2.691	2	46 23 1.1	19.146	2
3944	7.8	51 12.96	2.323	6	27 56 19.4	19.149	6
3945	6	51 23.96	2.417	6	31 12 5.0	19.153	6
3946	6	51 52.53	1.855	6	17 52 51.4	19.165	6
3947	6.7	51 59.64	2.686	5	45 38 33.1	19.169	5
3948	8.9	52 18.38	2.622	3	41 3 40.1	19.177	3
3949	8.9	52 24.07	2.605	3	40 0 12.2	19.179	3
3950	8.9	52 35.11	2.531	3	35 48 28.6	19.184	3
3951	8	52 37.63	2.705	6	46 49 12.0	19.185	6
3952	7.8	52 58.22	2.690	3	45 30 33.9	19.193	3
3953	8.9	53 0.01	2.539	3	36 2 20.8	19.194	3
3954	2	3043	284	..	1053	..	1 Androm.	3.4	53 11.99	2.731	6	48 41 32.0 31.9	19.199	16 12
3955	8.9	22 53 13.37	+2.709	4	46 53 27.8	-19.199	4

No.	Hevelius.	Bessel's Bradley.	Piazzi.	Wollaston.	Pond.	Argelander.	Flamsteed's No. and Bayer's Character.	Magnitude.	Right Ascension. Jan. 1, 1810.	Annual Precession.	No. of Obs.	North Polar Distance. Jan. 1, 1810.	Annual Precession.	No. of Obs.
3956	7.8	22 ^h 53 ^m 27.99 ^s	+2.615	5	40° 10' 11".1	-19".206	5
3957	7	53 33.05	2.705	5	46 26 44.0	19.208	5
3958	..	3045	286	..	..	..	2 Andromedæ	6	53 52.58	2.729	8	48 15 41.8	19.216	8
3959	7.8	53 53.64	2.431	4	30 49 21.7	19.217	4
3960	7	54 1.11	2.346	11	27 43 38.5	19.219	11
3961	7	54 5.45	2.714	5	46 57 40.4	19.221	5
3962	8	54 6.77	2.569	4	37 12 42.4	19.222	4
3963	7.8	54 30.62	2.582	4	37 46 27.5	19.232	4
3964	7.8	54 34.57	2.446	7	31 10 2.1	19.233	8
3965	7	54 34.93	2.546	5	35 47 4.2	19.234	5
3966	8	54 45.72	2.454	3	31 24 53.4	19.238	3
3967	7.8	54 54.08	2.327	4	26 48 35.5	19.242	4
3968	7	55 5.05	2.356	11	27 40 49.4	19.246	11
3969	7.8	55 11.04	+2.586	5	37 43 6.0	19.248	5
3970	36	3058	295	i. 47	..	..	Cephei	5	55 27.78	-0.109	5	6 40 16.0	19.255	6
3971	35?	..	..	..	..	..	Cephei	7	55 34.17	+2.441	5	30 34 33.3	19.258	5
3972	3	3052	293	..	..	..	3 Andromedæ	5	55 41.08	2.642	5	40 58 44.1	19.260	5
3973	7	55 45.43	1.108	5	10 40 37.3	19.262	5
3974	9	56 15.94	2.465	2	31 17 44.0	19.274	2
3975	..	3054	..	v. 49	1060	..	.....	5	56 20.93	2.238	6	23 48 50.0	19.276	6
3976	8	56 26.55	2.369	5	27 37 32.9	19.278	5
3977	7	56 54.86	2.379	6	27 47 3.4	19.290	6
3978	8	57 4.15	2.732	3	47 8 17.9	19.294	3
3979	7.8	57 12.88	2.356	4	26 55 56.4	19.297	4
3980	..	3067	..	..	..	..	.....	7	57 55.66	1.088	5	10 14 29.1	19.314	5
3981	7	58 21.28	2.363	4	26 43 46.9	19.324	4
3982	7.8	58 21.84	2.395	5	27 48 44.2	19.324	5
3983	8	58 31.14	1.791	4	15 30 23.8	19.328	4
3984	..	3061	308	..	..	..	1 Cassiopeiæ	5.6	58 36.71	2.493	7	31 36 20.4	19.330	7
3985	..	3060	..	..	..	..	.....	6.7	58 37.69	2.714	5	44 57 25.4	19.330	5
3986	7	58 46.81	2.620	5	38 12 33.4	19.334	5
3987	7.8	58 54.12	2.785	4	51 13 50.0	19.336	4
3988	..	3063	311	..	..	..	4 Andromedæ	6	58 59.81	2.712	5	44 38 12.6	19.339	5
3989	..	3064	312	..	..	537	5 Andromedæ	6	59 9.33	2.675	6	41 44 15.1	19.342	6
3990	6.7	22 59 11.09	+2.492	5	31 17 53.8	-19.343	5

No.	Hevelius.	Bessel's Bradley.	Piazz.	Wollaston.	Pond.	Argelander.	Flamsteed's No. and Bayer's Character.	Magnitude.	Right Ascension. Jan. 1, 1810.	Annual Precession.	No. of Obs.	North Polar Distance. Jan. 1, 1810.	Annual Precession.	No. of Obs.
3991	7	^h 22 ^m 59 ^s 27.56	+2.736	6	46° 27' 52".0	-19.349	6
3992	8	22 59 51.64	2.796	4	51 51 30.9	19.358	4
3993	6.7	23 0 5.35	2.402	5	27 23 36.1	19.363	5
3994	6	0 17.16	2.386	6	26 48 15.7	19.367	6
3995	1	..	..	..	.....	7.8	0 24.98	1.825	4	15 26 43.2	19.370	4
3996	7	0 42.45	2.680	5	41 22 38.2	19.377	5
3997	7	0 57.12	2.798	5	51 33 32.2	19.383	5
3998	..	3071	6	..	..	..	2 Cassiopeiæ	6	1 38.51	2.522	7	31 41 46.1	19.396	6
3999	..	3070	7	..	..	538	6 Andromedæ	6	1 41.90	2.759	12	47 28 28.6	19.399	12
4000	8	1 44.20	2.525	1	31 44 27.1	19.400	1
4001	8	1 48.10	2.418	3	27 17 51.4	19.402	3
4002	37	3074	8	iii.62	1066	..	33 Cephei π	6	1 53.18	1.870	11	15 38 20.6	19.404	12
4003	7.8	2 12.51	2.761	7	47 22 21.3	19.410	7
4004	7.8	2 18.89	2.780	3	49 9 14.8	19.413	3
4005	6	2 27.95	2.315	6	23 47 17.2	19.416	6
4006	7	2 39.37	2.644	5	37 58 16.7	19.420	5
4007	7	2 48.62	2.678	8	40 15 34.6	19.424	8
4008	8	3 19.73	1.283	5	10 23 29.8	19.435	5
4009	7.8	3 32.94	1.302	5	10 27 29.4	19.439	5
4010	7.8	3 49.07	2.665	4	38 48 3.5	19.445	4
4011	4	3075	14	..	1067	..	7 Andromedæ	5	3 52.36	2.703	6	41 37 49.0	19.446	20
4012	7.8	4 7.74	2.807	5	51 0 43.5	19.452	5
4013	7	4 7.90	2.787	5	48 58 5.7	19.452	5
4014	8	5 18.97	2.751	4	44 54 31.3	19.477	4
4015	7.8	5 33.04	2.779	2	47 22 20.4	19.481	2
4016	8	5 33.04	2.780	3	47 33 24.8	19.481	3
4017	6.7	5 35.65	2.699	5	40 24 53.7	19.482	5
4018	8.9	6 10.73	2.781	2	47 19 48.7	19.495	2
4019	8	6 10.88	2.785	1	47 43 7.8	19.495	1
4020	7	6 13.66	2.752	5	44 30 29.9	19.496	5
4021	8.9	7 14.33	1.990	3	15 47 55.4	19.516	3
4022	..	3085	..	..	..	..	.....	6.7	7 53.68	2.070	6	16 48 12.6	19.529	6
4023	..	3084	..	..	..	543	.....	6.7	8 4.77	2.681	5	37 48 33.0	19.533	5
4024	6	8 21.12	2.254	6	20 8 49.1	19.538	6
4025	6	23 8 22.43	+2.778	6	45 52 5.9	-19.538	6

No.	Hevelius.	Bessel's Bratley.	Piazz.	Wollaston.	Pond.	Argelander.	Flamsteed's No. and Bayer's Character.	Magnitude.	Right Ascension. Jan. 1, 1810.	Annual Precession.	No. of Obs.	North Polar Distance. Jan. 1, 1810.	Annual Precession.	No. of Obs.
4026	..	3089	39	..	1074	..	8 Andromedæ	6	^h 23 ^m 8 ^s 58.07	+2.740	6	42° 1' 17".1	-19.550	6
4027	6	9 2.87	2.779	6	45 32 48.5	19.551	6
4028	..	3091	45	..	..	..	9 Andromedæ	6	9 24.22	2.816	6	49 15 44.6	19.558	6
4029	6	10 6.86	2.788	6	45 54 0.3	19.571	6
4030	7.8	10 8.91	2.754	4	42 32 27.3	19.572	4
4031	8	10 13.26	1.693	3	11 48 12.3	19.573	3
4032	8	10 21.10	2.698	3	37 48 16.4	19.576	3
4033	iii.63	..	..	.....	7	10 38.93	2.054	5	15 44 17.8	19.581	5
4034	7.8	10 40.03	2.843	4	51 44 51.6	19.582	4
4035	5	3093	50	..	..	..	11 Andromedæ	6	10 40.30	2.756	6	42 24 56.1	19.582	6
4036	..	3094	51	..	..	..	.....	6.7	10 48.21	2.759	6	42 39 31.6	19.584	6
4037	..	3095	52	..	..	..	10 Andromedæ	6	10 51.13	2.821	6	48 57 38.0	19.585	6
4038	38	3097	53	iv.40	..	..	34 Cephei <i>o</i>	5	10 52.27	2.396	9	22 55 37.4	19.586	37
4039	54	..	..	..	.....	7	10 59.77	2.824	3	49 16 59.3	19.588	3
4040	6	11 1.03	2.161	6	17 20 52.2	19.588	6
4041	8	11 43.35	2.582	4	29 53 20.9	19.602	4
4042	8.9	11 53.86	2.631	3	32 31 20.8	19.605	3
4043	7	11 59.75	2.601	4	30 45 48.6	19.607	4
4044	8.9	12 7.06	2.637	3	32 45 42.6	19.609	3
4045	8.9	12 25.94	2.588	2	29 50 42.7	19.615	2
4046	8	13 1.96	2.697	3	36 13 24.6	19.626	3
4047	7.8	13 25.69	1.803	4	12 2 25.8	19.632	4
4048	8.9	13 44.34	2.712	2	36 55 59.0	19.637	2
4049	7.8	14 0.47	2.712	3	36 49 3.9	19.642	3
4050	..	3110	..	..	..	..	.....	5.6	14 6.65	2.624	6	30 54 25.2	19.644	6
4051	7	14 54.71	2.721	5	37 0 35.4	19.657	5
4052	6.7	15 3.93	2.845	6	49 25 43.5	19.660	6
4053	6.7	15 28.59	2.851	6	49 55 43.7	19.667	6
4054	..	3112	..	..	..	..	.....	7	15 31.83	2.679	6	33 30 23.5	19.668	6
4055	8	15 34.23	2.712	2	35 51 25.4	19.668	2
4056	7	15 40.69	2.534	5	25 41 50.8	19.670	5
4057	8	16 13.11	2.718	6	35 57 22.7	19.679	6
4058	7	16 15.21	2.705	6	34 56 11.9	19.680	6
4059	..	3115	81	..	1081	..	4 Cassiopeiæ	5	16 26.60	2.608	6	28 45 33.8	19.683	10
4060	7.8	23 16 48.13	+2.748	4	38 3 46.8	-19.689	4

No.	Hevelius.	Bessel's Bradley.	Piazzi.	Wollaston.	Pond.	Argelander.	Flamsteed's No. and Bayer's Character.	Magnitude.	Right Ascension. Jan. 1, 1810.	Annual Precession.	No. of Obs.	North Polar Distance. Jan. 1, 1810.	Annual Precession.	No. of Obs.
4061	8	^h 23 ^m 17 ^s 11.40	+2.749	2	37° 51' 52".7	-19".695	2
4062	8	17 23.43	2.633	3	29 36 32.1	19.698	3
4063	86	..	..	..	.....	7.8	17 31.67	2.751	4	37 52 31.9	19.701	4
4064	7.8	17 51.45	2.644	5	29 57 24.7	19.706	5
4065	..	3118	89	..	..	..	13 Andromedæ	6	17 59.61	2.850	6	48 7 58.9	19.709	6
4066	8.9	18 5.84	2.734	2	36 4 12.0	19.711	2
4067	8	18 21.46	2.739	3	36 10 44.5	19.715	3
4068	..	3121	..	..	..	..	.....	7.8	18 22.00	2.418	5	20 21 37.6	19.715	5
4069	7.8	18 44.69	2.509	4	23 10 42.5	19.721	4
4070	7.8	19 1.14	2.568	6	25 25 11.4	19.725	6
4071	..	3125	..	..	1084	..	.....	5	19 18.13	2.443	6	20 41 4.3	19.729	6
4072	7	19 59.53	2.764	4	37 22 45.2	19.740	4
4073	7	20 11.27	2.309	6	16 55 37.2	19.743	6
4074	7	20 22.72	2.835	5	44 34 47.7	19.746	5
4075	8	20 43.38	2.856	2	47 6 19.2	19.751	2
4076	8	21 5.59	2.839	2	44 34 59.6	19.756	2
4077	100	..	..	..	.....	7	21 8.89	2.714	4	32 29 51.7	19.757	4
4078	1	..	101	..	1086	..	B. F. 3224	5.6	21 18.40	2.716	12	32 29 51.9	19.759	12
4079	Casslop.	..	..	..	..	..	.....	8	21 31.56	2.860	2	47 4 13.1	19.763	2
4080	7	21 34.39	2.281	5	15 49 11.1	19.763	5
4081	6	3128	107	..	..	550	14 Andromedæ	6	21 58.28	2.894	6	51 48 22.6	19.769	6
4082	8	22 6.77	2.725	1	32 37 52.3	19.772	1
4083	110	..	..	..	.....	7	22 40.99	2.866	9	46 58 31.9	19.779	9
4084	8	22 51.22	2.868	2	47 13 27.2	19.781	2
4085	8	22 51.48	2.847	6	44 15 44.8	19.781	6
4086	7	23 32.35	2.162	5	13 9 12.1	19.791	5
4087	7.8	23 38.06	2.792	5	37 21 41.1	19.793	5
4088	6.7	23 42.21	2.623	6	25 18 32.1	19.794	6
4089	7	24 29.29	2.191	5	13 13 44.1	19.804	5
4090	7	24 40.72	2.858	7	44 21 56.3	19.807	7
4091	121	..	..	..	.....	7	24 45.65	2.878	5	47 8 43.3	19.808	5
4092	8.9	25 10.11	2.799	1	36 58 51.7	19.813	1
4093	..	3137	125	..	..	..	15 Andromedæ	6	25 21.23	2.904	6	50 48 37.3	19.816	6
4094	8	25 37.48	2.407	4	16 49 23.1	19.819	4
4095	8.9	23 25 41.60	+2.863	3	44 11 19.0	-19.820	3

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4096	8.9	^h 23 ^m 26 ^s 15.62	+2.823	2	38° 39' 17".2	-19".827	2
4097	6.7	26 22.48	2.825	5	38 45 35.2	19.829	5
4098	8	26 28.20	2.810	3	37 2 2.0	19.830	3
4099	7	26 39.54	2.624	6	23 33 29.6	19.833	6
4100	..	3140	..	..	..	..	.....	6	26 48.65	2.520	5	19 24 27.6	19.835	5
4101	39	3147	135	i. 49	..	..	Cephei	5	27 39.78	0.188	6	3 44 28.6	19.846	6
4102	8.9	27 50.80	2.835	1	38 46 53.3	19.848	1
4103	7	27 57.48	2.633	6	23 12 4.0	19.849	6
4104	9	28 12.34	2.469	2	17 7 49.4	19.852	2
4105	6	28 16.76	2.894	4	46 37 16.6	19.853	4
4106	7	3143	138	..	1089	551	16 Androm. λ	4	28 17.97	2.881	6	44 34 11.1	19.854	17
4107	7	28 45.82	2.867	6	42 2 53.5	19.859	6
4108	141	..	..	..	.....	7.8	28 47.09	2.904	3	47 58 19.8	19.859	3
4109	8	3144	142	..	..	..	17 Androm. μ	4	28 50.79	2.904	5	47 46 ^{58.4} _{58.1}	19.860	⁵ 50
4110	6.7	29 25.21	2.788	6	32 23 48.0	19.866	6
4111	..	3146	144	..	..	..	18 Andromedæ	6	29 58.16	2.864	6	40 34 47.7	19.872	6
4112	7	30 15.23	2.794	5	32 18 2.5	19.876	5
4113	8	30 18.96	2.911	3	47 43 7.5	19.876	3
4114	9	30 22.78	2.519	2	17 24 51.7	19.877	2
4115	9	30 31.66	2.517	2	17 12 20.5	19.879	2
4116	7	30 35.42	2.795	5	32 4 55.0	19.879	5
4117	7	31 1.68	2.742	5	27 19 25.8	19.884	5
4118	9	3149	151	..	1092	..	19 Androm. α	4	31 4.76	2.910	6	46 43 ^{3.0} _{2.3}	19.885	⁹ 25
4119	7	31 6.76	2.473	5	15 45 35.2	19.885	5
4120	152	iii. 65	..	..	.....	6.7	31 9.86	2.521	5	17 3 0.8	19.886	5
4121	9	31 13.91	2.744	2	27 18 4.8	19.886	2
4122	40	3152	155	ii. 54	1093	553	35 Cephei γ	3	31 38.70	2.378	3	13 25 39.8	19.891	11
4123	7	31 42.72	2.926	5	49 12 9.6	19.892	5
4124	8	31 47.39	2.468	4	15 17 55.6	19.892	4
4125	6.7	32 12.38	2.886	5	41 32 21.4	19.897	5
4126	8.9	32 20.41	2.929	2	49 16 10.0	19.899	2
4127	160	..	..	..	.....	7	32 53.42	2.917	5	46 17 46.8	19.904	5
4128	6	32 55.38	2.916	7	46 3 38.2	19.905	7
4129	8	33 5.06	2.502	4	15 28 2.8	19.906	4
4130	8	23 33 26.55	+2.759	6	26 32 14.6	-19.909	6

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4131	8·9	^h 23 ^m 33 ^s 47·74	+2·567	2	16° 55' 30"·1	—19"914	2
4132	7	35 10·70	2·868	9	35 50 48·5	19·927	9
4133	7	35 16·67	2·867	6	35 33 44·7	19·928	6
4134	173	..	..	..	.....	7·8	35 21·16	2·936	4	47 18 29·7	19·929	4
4135	7	35 29·61	2·869	5	35 39 38·7	19·930	5
4136	175	..	..	..	.....	6·7	35 35·43	2·867	6	35 15 14·4	19·931	6
4137	10	3163	181	..	1099	..	20 Androm. ↓	5	36 39·09	2·930	6	44 38 1·9	19·941	8
4138	16	3164	187	..	1101	..	5 Cassiopeæ τ	5	37 49·18	2·865	5	32 24 21·5	19·950	5
4139	6·7	38 8·88	2·937	5	44 13 20·6	19·953	5
4140	8·9	38 40·08	2·964	3	49 56 49·8	19·957	3
4141	41	3166	191	v.51.	1102	555	Cephei	5	38 54·00	2·782	11	23 14 55·0	19·959	11
4142	7·8	38 57·73	2·830	5	27 14 16·3	19·959	5
4143	8·9	39 5·86	2·962	1	48 51 39·9	19·961	1
4144	6	39 31·18	2·826	6	26 10 42·6	10·934	6
4145	..	3169	195	..	..	..	6 Cassiopeæ	6	39 38·63	2·853	6	28 50 27·1	19·965	6
4146	..	3170	..	..	..	..	.....	6	39 54·94	2·881	6	32 5 29·8	19·967	6
4147	202	..	..	..	.....	7	40 39·68	2·864	3	28 50 30·0	19·973	3
4148	204	..	..	..	.....	6	40 55·65	2·933	4	39 26 1·1	19·975	4
4149	7	41 12·61	2·856	5	27 18 44·5	19·978	5
4150	7	41 15·28	2·922	5	36 51 18·9	19·978	5
4151	7·8	41 27·11	2·978	5	49 53 34·1	19·979	5
4152	7	41 46·03	2·860	5	27 4 17·3	19·981	5
4153	7	42 1·98	2·977	5	48 58 23·3	19·983	5
4154	218	..	..	..	.....	6·7	43 16·37	2·716	6	15 30 54·0	19·991	6
4155	7·8	43 27·39	2·987	5	49 42 42·2	19·992	5
4156	6·7	43 43·02	2·906	6	30 21 8·2	19·993	6
4157	223	..	..	..	.....	6	44 4·72	2·956	4	39 32 5·9	19·995	4
4158	6·7	44 27·04	2·912	6	30 12 12·8	19·998	6
4159	7·8	44 28·72	2·996	2	51 46 29·5	19·998	2
4160	8	44 39·09	2·982	3	46 11 21·1	19·999	3
4161	12	3182	226	..	..	..	7 Cassiopeæ ε	5	44 56·68	2·936	6	33 33 27·5	20·001	6
4162	8	45 19·12	2·957	3	37 33 30·8	20·003	3
4163	1104	..	.....	5	45 42·58	2·790	6	16 38 49·5	20·005	6
4164	231	7	46 0·45	2·965	5	38 19 22·1	20·007	5
4165	6·7	^h 23 ^m 46 ^s 0·61	+2·983	6	43 42 3·9	—20·008	6

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4166	7.8	^h 23 ^m 46 ^s 4.34	+2.986	9	44° 41' 53".6	-20".007	9
4167	7	46 14.66	2.982	5	42 50 1.4	20.008	5
4168	8.9	46 55.39	3.001	3	48 32 19.3	20.011	3
4169	8	46 58.99	2.969	3	37 20 41.3	20.012	3
4170	7.8	47 7.67	2.821	5	16 55 12.3	20.013	5
4171	7.8	47 22.89	2.993	4	44 26 24.7	20.014	4
4172	7	47 27.53	3.003	5	48 23 56.5	20.014	5
4173	..	3185	237	..	..	..	.....	6	47 37.12	2.966	6	35 21 4.2	20.015	6
4174	..	3187	..	..	..	..	.....	7	47 45.94	2.552	5	7 52 1.8	20.016	6
4175	7.8	47 46.99	2.991	3	42 46 35.0	20.016	3
4176	7.8	48 11.92	2.846	5	17 11 28.8	20.018	5
4177	242	..	..	..	.....	6	48 32.65	2.991	6	40 37 23.0	20.019	6
4178	8	48 44.36	3.017	4	52 5 33.7	20.020	4
4179	8	48 50.07	3.002	5	44 44 57.6	20.020	6
4180	7.8	49 6.27	2.986	4	37 40 12.6	20.021	4
4181	7	49 9.19	3.004	11	44 38 40.3	20.022	11
4182	8.9	49 11.10	2.867	2	17 23 58.9	20.022	2
4183	8	49 14.06	2.986	3	37 23 3.4	20.022	3
4184	7.8	49 14.44	3.019	5	51 56 39.7	20.022	5
4185	8.9	49 24.18	3.010	2	46 29 36.8	20.023	2
4186	8	3190	245	..	..	..	8 Cassiopeiæ σ	5	49 25.67	2.981	6	35 18 9.9	20.023	6
4187	8	49 26.50	2.989	2	37 48 15.6	20.023	2
4188	8	49 28.98	2.932	4	24 14 33.8	20.023	4
4189	7	49 36.83	2.989	5	37 29 37.3	20.024	5
4190	247	..	..	..	.....	7	49 37.94	2.998	5	40 31 40.2	20.024	5
4191	7.8	49 44.61	2.999	3	40 32 59.6	20.024	3
4192	7	50 21.51	3.024	5	52 11 53.8	20.026	5
4193	..	3194	..	..	..	..	.....	6.7	50 57.57	2.375	5	4 21 4.9	20.029	6
4194	7	51 4.01	3.018	5	45 48 17.9	20.029	5
4195	7.8	51 20.00	2.956	6	24 12 39.7	20.030	6
4196	7	51 44.25	2.985	5	30 13 7.4	20.031	5
4197	51 53.78	3.023	4	46 22 54.0	20.032	4
4198	..	3195	1107	5	51 59.26	2.987	6	29 50 6.5	20.032	6
4199	6	52 2.81	3.027	6	48 41 25.6	20.032	6
4200	7	23 52 4.32	+2.921	5	17 26 45.4	-20.032	5

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4201	7.8	^h 23 ^m 52 ^s 25.91	+3.026	4	46° 31' 31".4	-20.033	4
4202	7.8	52 32.28	3.019	3	41 17 8.8	20.034	3
4203	6.7	52 38.79	2.995	7	30 21 14.5	20.034	7
4204	7.8	52 41.57	3.018	1	40 33 31.2	20.034	1
4205	8	52 47.38	2.973	5	23 53 38.3	20.034	5
4206	8	53 0.91	3.032	2	48 8 12.1	20.035	2
4207	7	53 25.54	3.034	5	48 18 35.7	20.036	5
4208	8	53 46.19	3.021	3	37 44 42.2	20.037	3
4209	7.8	53 46.56	2.956	5	17 53 4.3	20.037	5
4210	7.8	53 57.21	2.975	5	20 45 7.7	20.038	5
4211	7	53 59.75	3.030	5	42 37 14.5	20.038	5
4212	8	54 0.39	3.038	3	49 2 6.2	20.038	3
4213	7.8	54 5.23	2.984	5	22 10 51.5	20.038	5
4214	7	54 10.23	2.993	5	24 20 43.9	20.038	5
4215	8	54 26.27	3.031	1	41 19 9.9	20.039	1
4216	7.8	54 27.52	3.031	2	41 11 14.5	20.039	2
4217	..	3205	265	..	..	..	9 Cassiopeiæ	6	54 31.11	3.010	6	28 46 13.5	20.039	6
4218	8	54 34.83	3.040	2	48 28 18.1	20.039	2
4219	6.7	54 52.94	3.042	6	48 57 52.3	20.040	6
4220	6.7	54 56.27	3.001	6	23 53 35.7	20.040	6
4221	7	54 58.83	2.990	5	20 34 23.8	20.040	5
4222	5	55 21.33	3.021	6	29 44 40.6	20.041	6
4223	7	55 25.93	3.042	6	45 49 41.2	20.041	6
4224	8.9	55 33.53	3.040	3	42 34 48.4	20.041	3
4225	7	55 33.66	3.005	5	22 10 27.5	20.041	5
4226	7.8	55 38.53	3.040	4	41 17 6.5	20.041	4
4227	7.8	55 49.52	3.037	5	37 53 10.9	20.041	5
4228	8.9	55 56.33	3.046	3	46 35 19.0	20.041	3
4229	7.8	56 12.32	3.043	4	41 26 8.5	20.042	4
4230	8	56 13.43	3.047	3	46 19 4.7	20.042	3
4231	8.9	56 18.01	3.040	2	37 46 51.6	20.042	2
4232	8	56 32.83	3.019	3	22 25 16.2	20.043	3
4233	..	3211	275	..	..	..	10 Cassiopeiæ	6	56 38.56	3.029	6	26 51 42.4	20.043	6
4234	8	57 20.33	3.020	5	17 50 52.1	20.043	5
4235	8	23 57 38.36	+3.034	3	21 58 40.6	-20.044	3

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4236	7	^h 23 ^m 57 ^s 50.76	+3.058	4	50° 58' 45".8	-20".044	4
4237	6.7	57 51.93	3.058	5	50 54 33.3	20.044	5
4238	8	58 44.53	3.059	3	37 48 12.0	20.044	3
4239	7.8	58 44.58	3.044	5	16 50 41.6	20.044	5
4240	3	3216	283	..	1	1	11 Cassiop. β	3	59 6.06	3.060	10	31 53 54.2	20.044	32
4241	..	3216	..	ii. 55	7.8	59 6.23	3.042	5	11 20 32.1	20.044	5
4242	8	59 11.33	3.063	3	41 11 59.5	20.045	3
4243	7.8	23 59 38.62	+3.066	5	44 40 10.4	-20.045	5

NOTES.

I have been favoured by the Reverend R. Sheepshanks with the following Notes on his Comparison of the Places of Hevelius's Stars with the Places in Groombridge's Catalogue.

THE original observations (distances of stars from each other) on which Hevelius's Catalogue is founded, are in his *Machina Celestis*, lib. ii. At the end of the volume there is an index to the whole.

Hevelius's Catalogue in R.A. and Declination, as well as in Longitude and Latitude, is contained in his *Prodromus*, along with the longitudes and latitudes of the stars which have been observed by Tycho, the Prince of Hesse, Riccioli, Ulugh Beigh, and Ptolemy, all brought up to 1660, the epoch of the Catalogue. The stars observed for the first time, by Hevelius, are marked J. H.

In the third volume of Flamsteed's *Historia Celestis*, the Catalogue of Hevelius is reprinted from the *Prodromus*; arranged (for each constellation) in the order of R.A., and having its declinations converted into N.P.D. This seems to have been very carefully done, as I have scarcely found an error, except the omission of Leo Minor. As the *Prodromus* is scarce, at least in this country, and the arrangement in the *Historia Celestis* more convenient and already in use, I have used the numbers of Hevelius, as they are found in the reprint of Flamsteed. For Leo Minor, which is not given in Hevelius's Catalogue in the *Historia Celestis*, the references by Hevelius's numbers are to the original work.

It is probable that Hevelius computed the longitudes and latitudes of his stars first, from the distances; and then the R.A. and N.P.D. from the longitudes and latitudes. It is certain that the R.A. and N.P.D. are less correct than the longitudes and latitudes, as will be seen from remarks on various stars; which, indeed, was likely, from Hevelius having some check on his longitudes and latitudes in the determinations of former astronomers, Tycho, for instance. It is a remarkable oversight in Hevelius, that he has not himself checked his determinations in declination by observations in the meridian, as there are scarcely any observations of meridional zenith distance, except those of some of the fixed stars towards the end of his work; viz. the latter end of 1674, et seq.

Groombridge.

No. 60. This star would agree as well as any with the distances of Hevelius for the star *Supra erectionem sedis*, or No. 7 of the *Historia Celestis*. The distances in Hevelius, *Machina Celestis*, p. 636, are

Supra erectionem sedis and *Caput Cassiopeiæ* 8° 23' 10"

Supra erectionem sedis and *Lucida Cathedræ* 3 27 10

But in lib. iv. p. 319, the distances are,

10° 32' 5"

7 10 20

94. There is some confusion in the references to this star. The N.P.D. reduced to the epoch 1660, is 30° 1'. That of Hevelius is 29° 52'.

150. Hevelius, No. 11, on comparing longitude and latitude, is clearly 25 Cassiopeiæ; but the R.A. is set down 5° instead of 7°.

246, is clearly Hevelius 31; but in the *Historia Celestis*, and in the original, the declination is 3° wrong. In the *Historia Celestis* for N.P.D. 44° 54' 48" read 47° 54' 48".

248. Hevelius 22 is clearly 31 Cassiopeiæ, on comparing longitudes and latitudes. Some error is made in computing the declination.

No.

289. Hevelius 27 is clearly the same as 34 Cassiopeiæ, on comparing longitudes and latitudes; but the R.A. and N.P.D. are both wrong. I have conjectured that they should be, R.A. $14^{\circ} 51'$, N.P.D. $33^{\circ} 33' 20''$; but the original agrees with the *Historia Celestis*, and gives north declination, $56^{\circ} 56' 40''$.
332. Cassiopeiæ Hevelius 2 agrees in longitude and latitude with 39 Cassiopeiæ, but the R.A. and N.P.D. are wrongly computed. Taking the distance (Machina Celestis) from α Arietis and Capella, and reducing the places of those stars to 1810, from Pond's Catalogue, I find R.A. $1^h 21^m 56^s$, N.P.D. $31^{\circ} 47' 8''$. Epoch 1810.
387. Andromedæ Hevelius 43 has probably some error. Its place, brought up to 1810, is R.A. $1^h 40^s$, N.P.D. $39^{\circ} 18'$. Can it be No. 387?
- 447, &c. Persei Hevelius 2 seems to be wanting.
- 467, &c. Persei Hevelius 3 seems to be missing. I cannot find any distances of this star in the *Machina Celestis*. It is called *In cuspidē ensis*.
488. The distances for the place of Persei Hevelius 4, are as follows:
- | | | |
|---|----------------------|----------------|
| <i>In dextrâ manu Persei</i> and <i>Palilicium</i> | $47^{\circ} 52' 5''$ | Dec. 25, 1661. |
| <i>In dextrâ manu Persei</i> and <i>Cornu Boreale Tauri</i> | $43 20 0$ | Dec. 26, 1661. |
| <i>In dextrâ manu nebulosa</i> and <i>Humerus dexter Aurigæ</i> | $35 36 25$ | Feb. 15, 1662. |
- (The term *nebulosa* evidently refers to the confused appearance caused by the cluster of the four stars, 475, 476, 488, 490. A.)
- 627, &c. Persei Hevelius 22 appears to be wanting. This star is called, in the *Historia Celestis* and in the *Prodromus*, *In cubito sinistro inferior*. In the *Machina Celestis*, I find no star with this description, but these entries, which may refer to two different stars:
- | | | |
|--|----------------------|------------------|
| <i>In vaginâ sub sinistro cubito Persei</i> , and <i>Humerus dexter Aurigæ</i> | $28^{\circ} 6' 25''$ | } Sep. 18, 1661. |
| <i>In vaginâ Persei</i> and <i>Cornu Boreum Tauri</i> | $28 58 10$ | |
- I presume these are the same star, and the same with that called *In cubito sinistro inferior*, as there is no notice of a star *In vaginâ*, either in the *Historia Celestis* or in the *Prodromus*.
856. The stars in Cepheus are set down in the *Machina Celestis* under different titles from those in the *Prodromus*; and it would be a difficult business to identify them all.
911. The place of this star, thrown back to 1660, is R.A. $67^{\circ} 30'$, N.P.D. $16^{\circ} 35'$. The place of Camelop. Hevelius 18, is R.A. $66^{\circ} 45'$, N.P.D. $16^{\circ} 34'$.
1067. The place, thrown back to 1660, is, R.A. $84^{\circ} 42'$, N.P.D. $47^{\circ} 8'$. The place of Aurigæ, Hevelius 38, is R.A. $84^{\circ} 33'$, N.P.D. $47^{\circ} 29'$.
1141. This is called, in the *Prodromus*, *Ad stellam polarem inter pedes australis*; but I cannot thus identify it in the *Machina Celestis*, where there is no such title (see Cephei, Hevelius 24, No. 3308). I find, however, these entries, one of which may refer to this star:
- | | | |
|--|----------------------|------------------|
| <i>Sub pede sinistro Cephei precedens</i> 6 mag. and <i>In Vertice Draconis</i> | $47^{\circ} 5' 15''$ | } Oct. 26, 1661. |
| <i>Sub pede sinistro Cephei sequens</i> , and <i>In Vertice Draconis</i> | $44 17 35$ | |
| <i>Sub pede sinistro Cephei precedens</i> , and <i>Humerus dexter Cephei</i> .. | $30 44 0$ | |
| <i>Sub pede sinistro Cephei sequens</i> , and <i>Humerus dexter Cephei</i> .. | $29 48 50$ | |
- The *sequens* may belong to this star.
1231. Lyncis, Hevelius 5, brought up to 1810, is R.A. $6^h 41^m 12^s$, N.P.D. $31^{\circ} 19' 25''$.
1235. Can this be Lyncis, Hevelius 4? Its place, brought up to 1810, is R.A. $6^h 39^m 40^s$, N.P.D. $31^{\circ} 59'$. Its description is *In collo inferior*.
1274. Lyncis, Hevelius 7, brought up to 1810, is R.A. $7^h 2^m 10^s$, N.P.D. $29^{\circ} 54' 40''$. Its description is *Ad aurem sinistram*.
1293. Lyncis, Hevelius 9, *In latere precedens*, brought up to 1810, is R.A. $7^h 5^m 26^s$, N.P.D. $34^{\circ} 6'$.
1355. Camelop. Hevelius 28, *In collo tertia australis*, brought up to 1810, is R.A. $7^h 21^m$, N.P.D. $9^{\circ} 55'$.
- 1400, &c. Ursæ Majoris, Hevelius 4, seems to be missing. The description is *In rostro superior, vel potius in fronte inferior inter oculos*. The distances are:
- | | | |
|--|-----------------------|-------------------|
| <i>In rostro superior U. Maj.</i> 5 mag. and <i>Pollux</i> | $36^{\circ} 57' 20''$ | } March 29, 1667. |
| <i>In rostro superior U. Maj.</i> and <i>Lucida capitis leonis</i> | $53 33 0$ | |

No.

Unfortunately, *lucida capitis leonis* is not a decisive appellation. If there be no mistake (as of *capitis* instead of *colli*, &c.), this must mean what Hevelius calls *In capite australis*, or 17 Flamsteed ϵ .

Assuming this to be the star, I find for 1810, R.A. $5^h 35^m 24^s$, N.P.D. $32^\circ 7'$; therefore, either I have made some mistake, or *lucida capitis* is some other star of Leo.

1422. Ursæ Majoris, Hevelius 5, *In rostro media*, brought up to 1810, is R.A. $8^h 2^m 37^s$, N.P.D. $29^\circ 54' 40''$.

1442. Thrown back to 1660, is R.A. $120^\circ 55'$, N.P.D. $23^\circ 45'$. No. 1451, is R.A. $122^\circ 7'$, N.P.D. $23^\circ 51'$. Ursæ Majoris, Hevelius 7, is R.A. $121^\circ 22'$, N.P.D. $23^\circ 49'$. Its description is *Ad oculum præcedens*. The entries in the Machina Celestis are :

<i>Ad oculum præcedens minor Ursæ Majoris</i> , and <i>prima caudæ Ursæ Majoris</i>	$31^\circ 30' 0''$	} Nov. 30, 1663.
.... major	$31 11 12.5$	
<i>Ad oculum præcedens Ursæ Majoris</i> , and <i>in pectore Ursæ Minoris</i> ..	$33 15 27.5$	
.... sequens	$33 37 47.5$	} April 2, 1676.
<i>Ad oculum præcedens superior Ursæ Majoris</i> , and <i>Pollux</i>	$37 52 45$	
.... sequens inferior	$37 17 20$	
<i>Ad oculum præcedens Ursæ Majoris</i> , and <i>in tergo Leonis</i>	$51 26 32.5$	} April 3, 1676.
.... sequens	$50 40 0$	

I presume these are the same couples, but the variation of phrase renders it uncertain.

1510, &c. Ursæ Minoris, Hevelius 1, 2, 3, are not in this catalogue, and there is some error respecting them. On looking at the Machina Celestis, I cannot find any observations referring to them.

1701. The place of Ursæ Majoris, Hevelius 37, brought up to 1810, is R.A. $10^h 43^m$, N.P.D. $33^\circ 50'$; but an error of $30'$ has been committed in the computation of N.P.D. The distances are as follow :

<i>In medio ventris trium minorum sequens</i> , 6 mag. and <i>Cingulum Boötis</i> ..	$49^\circ 44' 15''$	} April 22, 1670.
.... Vindemiatrix	$50 28 0$	

Cingulum Boötis is Flamsteed's 36 Boötis ϵ . *Vindemiatrix* is 47 Virginis ϵ . On computing the place of the star for 1810, I find it R.A. $10^h 42^m 32^s$, N.P.D. $34^\circ 22' 30''$.

1717. Can this be Ursæ Majoris, Hevelius 39? Its approximate place for 1810 is R.A. $10^h 47^m$, N.P.D. $43^\circ 15'$. The observations are as follow :

<i>In genu sinistro pedis posterioris Borealis præcedens</i> , and <i>Vindemiatrix</i> ..	$43^\circ 14' 12.5''$	} April 20 and 21, 1670.
.... Cingulum Boötis ..	$47 44 20$	

So entered in the Index ; but some discrepancy in the book itself.

1732. Ursæ Majoris, Hevelius 44, brought up to 1810, is R.A. $10^h 56^m 30^s$, N.P.D. $50^\circ 6' 10''$.

1731, &c. U. Maj., Hevelius 43 is missing. Its description is *duarum sub genu sequens*, but it is not cited by this title in the Machina Celestis. I conceive 41 and 43 to be the stars mentioned as follows :

<i>In genu sinistro duarum sequentium australiorum præcedens</i> , sive <i>in poplite præcedens</i> , 6 mag.	} and <i>Vindemiatrix</i> $39^\circ 59' 55''$
<i>In genu sinistro ped. poster. sequentium duarum sequens</i> , sive <i>in poplite sequens</i> , 6 mag.	
<i>In genu sinistro ped. poster. duarum sequentium australiorum præcedens</i>	} and <i>Vindemiatrix</i> $39 4 15$, April 20, 1670.
<i>In genu sinistro ped. poster. duarum sequentium australiorum sequens</i>	
<i>In genu sinistro ped. poster. duarum sequentium australiorum sequens</i>	} and <i>Cingulum Boötis</i> .. $47 53 17.5$.
<i>In genu sinistro ped. poster. duarum sequentium australiorum sequens</i>	
<i>In genu sinistro ped. poster. duarum sequentium australiorum sequens</i>	} and <i>Cingulum Boötis</i> .. $47 39 15$, April 21, 1670.
<i>In genu sinistro ped. poster. duarum sequentium australiorum sequens</i>	

How, after such a nomenclature as this, Hevelius could speak disparagingly of any other, I cannot tell.

1883. Is this U. Majoris, Hevelius 61? Its place, brought up to 1810, is R.A. $12^h 16^m 51^s$, N.P.D. $37^\circ 18'$. The observations are :

<i>Superior Lumbi</i> , and <i>Lucida Coronæ</i>	$43^\circ 25' 15''$	} Oct. 23, 1663.
<i>Superior Lumbi</i> , and <i>in Vertice Draconis</i>	$48 43 15$	
<i>Superior Lumbi</i> , and <i>Vindemiatrix</i>	$41 19 42.5$	April 26, 1670.

The second of these I find in the summary at the end of the volume, but not in the book itself under the date.

No.

2039. Can. Venat. Hevelius 20, brought up to 1810, is R.A. $13^h 37^m 25^s$, N.P.D. $48^\circ 46' 20''$. The observations are :
In tergo Asterionis præcedens, 6 mag. and *in humero U. Minoris* $33^\circ 50' 0''$ April 5, 1671.
 superior, and *Cauda Leonis* $36 47 30$ April 9, 1676.
 and *Rostrum Draconis* $39 0 5$ April 5, 1671.
2062. Ursæ Majoris, Hevelius 73, brought up to 1810, is R.A. $13^h 46^m 49^s$, N.P.D. $35^\circ 36'$. The observations are as follows :
In triangulo supra caudam sequens U. Majoris, and *Lucida Coronæ* $32^\circ 37' 30''$
 and *Lucida Lyræ* $48 55 42.5$ Oct. 23, 1663.
- 2080, &c. Draconis, Hevelius 9, is missing. The distances, from the Machina Celestis, are,
Inter ultimam et extremitatem in cauda Drac. 5 mag. and *Vertex Draconis* .. $45^\circ 10' 30''$
 *humerus dexter Cephei* 41 8 45 Oct. 23, 1661.
2130. Ursæ Minoris, Hevelius 5, reduced to 1810, is R.A. $14^h 28^m 34^s$, N.P.D. $13^\circ 18' 51''$. The distances are as follow :
 (*) *Ad humerum U. Minoris proxima*, and *Vertex Draconis*.. $31^\circ 31' 15''$ Sept. 22, 1661.
 (*) *Ad humerum U. Minoris proxima*, and *Cauda Cygni* $47 17 52$ Oct. 15, 1661.
Ad humerum U. Minoris altera superior, and *Schedir Cassiopeiæ* $45 12 5$ } Jan. 5, 1676.
 (*) *Ad humerum U. Minoris proxima secunda sequens* $46 36 30$ }
 (*) *Proxima ad humerum Ursæ Minoris*, and *Cingulum Boötis* $48 37 52.5$ } April 4, 1676.
Altera ad humerum Ursæ Minoris $50 39 47.5$ }
- It is pretty clear that the star marked (*) is Hevelius 5, and the other Hevelius 4.
2329. Draconis, Hevelius 14, brought up to 1810, is R.A. $16^h 17^m 40^s$, N.P.D. $23^\circ 13' 20''$, *in tertid flexurâ sequens*. The titles of the index of the Machina Celestis are *in flexurâ tertid*, which I suppose is Hevelius 15; and *ad flexuram tertiam* 6 mag., which I presume is Hevelius 14. The distances are :
In tertid flexurâ Draconis, and *Lucida Lyræ* $34^\circ 39' 17''$ }
Ad tertium flexum, 6 mag. $35 36 0$ } Oct. 22, 1661
In tertid flexurâ Draconis, and *Cauda Cygni* $39 0 0$ }
Ad tertium flexum $41 1 30$ }
2396. Draconis, Hevelius 20, brought up to 1810, is R.A. $16^h 55^m$, N.P.D. $24^\circ 32'$.
2434. Herculis, Hevelius 32, brought up to 1810, is R.A. $17^h 14^m 53^s$, N.P.D. $43^\circ 20' 10''$. The nomenclature of the Machina Celestis differs from that of the Prodrômus, and it would be a tedious business to work out the observations completely.
2474. Herculis, Hevelius 39, *nebulosa in extremitate sinistri pedis*, brought up to 1810, is R.A. $17^h 43^m 25^s$, N.P.D. $41^\circ 54'$. The following are observations of distance :
In sinistro pede nebulosa Herculis, and *Cauda Aquilæ* $37^\circ 39' 0''$ }
 and *Extrema alæ australis Cygni* $42 27 40$ } Aug. 22, 1661.
In sinistrâ surâ Herculis nebulosa, and *in latere Herculis* (nothing given)
Nebulosa in sinistro pede Herculis, and *Cauda Aquilæ* $37^\circ 42' 47''$ }
In sinistrâ surâ Herculis nebulosa, and *Extrema alæ australis Cygni*.... $38 19 10$ } Nov. 2, 1674.
Nebulosa in sinistro pede Herculis, and *Extrema alæ australis Cygni*.... $41 24 32.5$ }
 *Cauda Aquilæ* $30 33 40.0$ } Nov. 2, 1674.
- Apparently two stars, one *in sinistro pede*, the other *in sinistrâ surâ*; but it is difficult to say what the distances are.
2811. 57 Draconis δ is the same star as Hevelius 19, as will be seen on comparing the longitudes and latitudes in Flamsteed; but Hevelius has not deduced the R.A. and N.P.D. correctly. The distances are :
Ante flexuram secundam lucida borealis, and *Rostrum Cygni* $39^\circ 46' 50''$ }
 *Cauda Cygni* $25 11 15$ } Oct. 19, 1661.
Ante secundum flexum Draconis borealis, and *Genu sinistrum Herculis* .. $32 12 5$ Oct. 21, 1661.
2840. 60 Draconis τ is certainly Hevelius 36, but there is some error in his R.A. and N.P.D. These, brought up to 1810, are R.A. $19^h 22^m$, N.P.D. $18^\circ 3'$. The distances are :

No.

<i>Post secundum flexum Draconis præcedens</i> , and <i>Cauda Cygni</i>	29° 1' 0"	} Oct. 21, 1661.
..... <i>sequens</i>	29 41 0	
<i>Post secundam flexuram Draconis sequens</i> , and <i>in vertice Cephei borealis</i>	22 31 12	} Oct. 22, 1661.
..... <i>præcedens</i>	23 43 0	

The third distance is a mean of two measures; another measure is 22° 41' 35": probably a misprint, as in the index it is 31'.

2898. Draconis, Hevelius 37, brought up to 1810, is R.A. 19^h 36^m, N.P.D. 20° 33'. There is some confusion, which it would be too long to unravel, owing to the abominable nature of Hevelius's nomenclature, and the variations between the names in the Prodromus and the Machina Celestis.

2976. Cephei, Hevelius 1, brought up to 1810, is R.A. 19^h 50^m 10^s, N.P.D. 32° 42'. The distances are:

<i>In pallio Cephei australis ad brachium dextrum</i> 6 mag. and <i>Scheat Pegasi</i>	44° 12' 25"	} Oct. 26, 1661.
..... <i>Cingulum Androm.</i>	54 47 35	

3201. Hevelius calls this *nebulosa supra caudam præcedens in pede boreo ultima*. His place is, R.A. 304° 54' 8", N.P.D. 42° 5' 40": Groombridge, thrown back to 1660, is R.A. 304° 54', N.P.D. 42° 10' 30".

3308. Cephei, Hevelius 24. In the Prodromus *ad stellam polarem inter pedes Borealis* (Cephei Hevelius 51 has the same title, changing the last word to *Australis*; but I find no such designation in the Machina Celestis). In the Machina Celestis, unfortunately, the stars are called by different names. I only find one noted by its nearness to the pole; viz.

<i>Ad stellam polarem et polum inter pedes</i> } and <i>in Vertice Draconis</i> ...	41° 10' 20"	} Oct. 26, 1661.
<i>Cephei 6 Mag.</i>	<i>Humerus dexter Cephei.</i> 30 3 35	

3381, &c. Cygni, Hevelius 33. *Nebulosa duarum supra caudam sequens informis*, R.A. 312° 10' 5", N.P.D. 36° 54' 40". The only entries which I can find in the Machina Celestis, are:

<i>Nebulosa duarum supra caudam Cygni 6 mag. inferior</i> , and <i>Markab Pegasi</i>	46° 9' 30"	} Nov. 2, 1660.
<i>Nebulosarum duarum</i>	<i>Caput Andromedæ</i> 45 34 0	
<i>Borealem pedem sequens Cygni 6 mag., seu</i> } and <i>Os Pegasi</i>	42 2 15	} Sep. 15, 1676.
<i>nebulosa supra caudam inferior</i>	<i>Caput Andromedæ</i> 45 35 22.5	
<i>Borealem pedem sequens Cygni</i>		

The second and fourth distances are given in the index as measured from *cingulum Andromedæ*; but there is no doubt that the original is correct.

All these evidently refer to the same star, and, probably, to Hevelius 22, Groombridge 3201. However that may be, I cannot find any reference to more than one of the nebulous stars; viz. that called *inferior*.

3761. Cephei, Hevelius 26, *in tiarâ duarum supremarum præcedens*, brought up to 1810, is R.A. 22^h 14^m 30^s, N.P.D. 38° 58'. The observations of distance are as follows:

<i>In Tiarâ Cephei duarum superiorum præcedens</i> 6 mag. and <i>Scheat Pegasi</i>	25° 18' 10"	} Dec. 20, 1672.
..... <i>Caput Androm.</i>	30 10 25	
..... and <i>Scheat Pegasi</i>	25 7 15	} Dec. 19, 1672.
..... <i>Caput Androm.</i>	30 9 40	

The first or third of these observations is 10' wrong. The observation of Dec. 20 is omitted in the index to the Machina Celestis.

3971. Cephei, Hevelius 35 is called, in the Prodromus, *in sceptro*: in the Machina Celestis there is no such designation. Hevelius's place, brought up to 1810, is R.A. 22^h 58^m 40^s, N.P.D. 30° 42'.

The following distances may refer to this star:

<i>In volâ sinistra manus 5 mag.</i> and <i>Scheat Pegasi</i>	45° 42' 0"	} Oct. 24, 1661.
..... <i>Cingulum Andromedæ</i>	42 23 20	
..... 6 mag. and <i>Caput Andromedæ</i>	46 7 30	

4035. Andromedæ, Hevelius 5, *in catenâ dextra manus quarta*, brought up to 1810, is R.A. 23^h 11^m, N.P.D. 42° 18' 35".

No.

4138. Hevelius 16 is clearly the same star as 5 Cassiopeiæ, on comparing the longitude and latitude. The R.A. and N.P.D. are wrongly computed.
4161. Hevelius 12 is clearly 7 Cassiopeiæ, on comparing the longitude and latitude; but the R.A. is wrongly set down.
4186. Cassiopeiæ, Hevelius 8, in the *Historia Celestis*, has longitude γ $25^{\circ} 27' 3''$, instead of φ $25^{\circ} 27' 3''$. This is correct in the *Prodromus*; but in both cases the R.A. and N.P.D. are wrongly computed. On comparing longitudes and latitudes, it is the same star as 8 Cassiopeiæ Flamsteed.

I understand from Mr. Sheepshanks, that the remarks above are not to be considered as a complete discussion of Hevelius's observations. In their present state, they will, however, I conceive, be found a most valuable addition to our knowledge respecting what may be considered the first of modern catalogues.

Notes on the Comparisons with Mr. Pond's Catalogue of 1112 Stars.

1119. Pond 303. Pond's N.P.D. is $1'$ too great.
- 2365 } Pond 698. It appears that Pond's R.A. corresponds to the first of these stars, and his polar distance to the
2366 } second.
- 2445 } Pond 746 and 747. The minutes in Pond's and other catalogues are 28; but in each of Groombridge's observa-
2446 } tions the minutes are 29.
2719. Pond 819. Pond's R.A. is 1^m too great.
3246. Pond 920. Pond's N.P.D. is $30'$ too great.
- 3826 } Pond 1032 and 1033. The R.A. of the first is combined with the N.P.D. of the second, and *vice versa*, in Pond's
3827 } Catalogue; but, on reference to Groombridge's observations, as well as from examination of the stars, it appears that Groombridge is correct.

THE END.

LONDON:

PRINTED BY JAMES MOYES, CASTLE STREET,
LEICESTER SQUARE.

In the Account of Mr. GROOMBRIDGE'S published Papers, the following was inadvertently omitted. It ought to have been placed before No. II. page xxxii.

Transactions of the Royal Society of Edinburgh, Vol. VII. Comparison of the North Polar Distances of Thirty-eight Principal Fixed Stars, on the 1st of January, 1800, as determined by Observations made at Greenwich, Armagh, Palermo, Westbury, Dublin, and Blackheath. By S. GROOMBRIDGE, Esq. Blackheath, F.R.S. London. Communicated by Dr. BREWSTER. Read 16th November, 1812.

This Paper contains merely a Table of the North Polar Distances of Dr. Maskelyne's 36 Principal Stars south of the zenith of Greenwich, together with those of Polaris and γ Draconis, arranged in seven columns; of which six contain the results from the six Observatories mentioned above: and the seventh contains Mr. Pond's mean of the results at Armagh, Palermo, and Westbury. No statement whatever is given of the number of observations, the method of observing, or the method of reducing: the diameters of the different instruments, including Mr. Groombridge's, are alone mentioned.

The reader is requested to correct the following error:—

No. 1837, N.P.D. for $46^{\circ} 55' 42''\cdot6$ read $46^{\circ} 55' 43''\cdot9$

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